CAMPUS PARK PROJECT

APPENDIX H

CULTURAL RESOURCE SURVEYS

SPA 03-008, GPA 03-004, R03-014, VTM 5338 RPL6,
S 07-030, S 07-031, LOG No. 03-02-059, SCH No. 2005011092

for the

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

SEPTEMBER 2009

2007 CULTURAL RESOURCE SURVEY

Heritage Resources
P.O. Box 8 ✧ Ramona, CA 92065 ✧ (760) 789-8509

April 24, 2007

Dr. Glenn Russell
County of San Diego
Department of Planning and Land Use
5201 Ruffin Road, Suite B
San Diego, CA 92123-1666

Reference: Campus Park/Passerelle Property (GPA03-004/REZ03-014/SPA03-008/TM5338/Log No. 03-02-059): cultural resource survey

Dear Dr. Russell:

This letter describes the research and field survey performed for the Campus Park/Passerelle Property (GPA03-004/REZ03-014/SPA03-008/TM5338/Log No. 03-02-059) property (Figures 1 and 2). The archaeological tasks are those required by the California Environmental Quality Act (CEQA), Sections 21083.2 of the Statutes and 15064.5 of the Guidelines, and the County's Resource Protection Ordinance- and Draft Report Format and Content Requirements, Cultural Resources Archaeological and Historical Resources. Tasks included record searches, a review of historic maps and the 1928 aerial photograph of the property, a field survey of the northern (previously unsurveyed) portion of the property, and a field update for the southern (previously surveyed) portion of the property (Figure 3). The County of San Diego consulted with the local Native American Groups pursuant to Government Code 65352.3 (Senate Bill 18) and that consultation documentation is attached to this letter as Attachment 1. The research, including a review of the 1979 and 1982 surveys of the southern portion of the property, identified no previously known prehistoric sites on the property. Historically, most areas of the property have been in agriculture for at least a century and several farmsteads were present in the early twentieth century. The current field survey of the northern portion of the property (old agricultural fields) was seriously hampered by a dense weedy growth and the heavily eroded land surface, resulting in poor visibility and access across the majority of the area. No prehistoric resources were discovered. The archaeological remains of one circa-1920s farmstead complex were observed on the northern portion of the property. However, because the poor surface visibility and access precluded satisfactory inspection of the land surface, it is possible that additional

cultural resources could remain undiscovered on the property. In addition, given the depositional environment on the southwestern portion of the property, it is also possible that prehistoric archaeological deposits could lie buried below the alluvium. The following paragraphs provide details regarding the research and fieldwork as well as recommendations for further measures related to cultural resources given the poor survey conditions.

Natural and Cultural Background

The property lies northeast of the intersection of Pala Road and Interstate 15, extending nearly two miles north along the east side of the highway. The property ranges in elevation between approximately 280 feet above mean sea level (AMSL) in the southwest valley bottom area to approximately 620 feet AMSL at the northeastern corner. The property lies on the east slopes and in the bottomland of a wide south-flowing drainage that merges with the San Luis Rey River immediately to the south. The northeastern portion of the property rises sharply to Monserat Mountain on the east. The granitic boulders that occur on the northeastern slopes are erosion-exposed outcrops of the California Batholith. The extreme eastern steep-sloped portions of the property are densely covered in coastal sage scrub and chaparral species. The central and southern portions of the property lie within the tributary valley bottom and are either in active agriculture or are fallow fields. The southwestern portion of the property lies in an alluvial depositional environment where soil deposition could reach substantial depths. The major drainage areas undoubtedly once contained oaks and other riparian species as well as seasonal water.

The property lies between the Santa Margarita River/Temecula Valley region to the north and the San Luis Rey River Valley region to the south. Little archaeological information has been gathered for the areas surrounding the property, although one rock art site, RIV-116, is documented on the boulder slopes near Rainbow. A large village site has been identified in the San Luis Rey River Valley to the southeast (known as *Tomka*). Surrounding sites are located on low knolls overlooking the drainage and contain midden soils, a variety of artifacts, and rock art (Wade 1988). Similarly, a village complex (*Temeku*) has been identified at the opening of the Santa Margarita River in the Temecula Valley (McCown 1955, Wade 1989). The archaeological information known about these site complexes suggests that concentrations of occupation focused near major drainage confluences. Surrounding special use sites were sited near natural resources and occupied for short periods during food collecting and processing activities.

The natural grasslands, fertile soils, and reliable water in the surrounding area were not only attractive resource areas for the prehistoric inhabitants, but also for the later Spanish, Mexican, and American ranchers and farmers. As early as 1810, the mission established grain fields and orchards at San Antonio

de Pala, six miles to the east, and in the Temecula Valley, nine miles to the north (Brigandi 1999). After the Mexican revolution and subsequent secularization of the missions, ranchos were established to the north in Temecula Valley and to the east at Pauma. The project property itself was part of Rancho Monserate, granted to Ysidro Maria Alvarado in 1846. Alvarado, followed by his son Tomas, grazed sheep, cattle, and horses and maintained a lavish household (Rush 1965). The ranch house was located approximately one-half mile downstream from the project property on the north bank at a bend in the San Luis Rey River. In the late nineteenth century, American-period farming settlement focused on the fertile valleys to the south in Bonsall, to the east in Pala, and to the north in Temecula. By the beginning of the twentieth century, the tributary valley, within which the project property is located, was developed in grain fields and orchards (Photographs 1928). A ranch complex was located along Pala Road east of the project property (Maps 1901) and two ranch complexes were located in the central and northern portions of the project property. Large ranches, developed out of the old Monserate Rancho lands, operated through the mid-twentieth century (Photos 1953, Maps 1942). These include Rancho San Luis Rey, including a portion of the current project property, where Charles Cooper raised race horses; Pankey Bros. where Edgar and Robert Pankey established a diversified farm enterprise including citrus, avocado, and lima beans; and Duffy Ranch to the northwest (Rush 1965:86-88, Maps 1942). In the 1950s, a large portion of the Pankey acreage was bought to create the Pala Mesa suburban development to the west (Rush 1965). Today, portions of the agricultural valley have been developed into a golf course, Duffy Ranch is a trailer park, and residential development is moving into the previously vacant rugged hills. Currently, the Passerelle property is divided between active agriculture and fallow fields.

Record searches were completed at the San Diego State University-South Coastal Information Center and San Diego Museum of Man. Although multiple archaeological surveys have been conducted within a one-mile radius of the property, only five archaeological sites and two isolates have been recorded. Surveyed areas include portions of the tributary valley, Caltrans investigations close to I-15 and Pala Road, and a few low knoll areas to southeast, southwest, and northwest. Four of the sites and one isolate are recorded on the southern lower slopes of the prominent knoll 300-1000 meters east of the southeast corner of the project property and north of Pala Road. These consist of two pictograph boulders, a probable village site, bedrock milling, and isolated flakes. D. L. True conducted an excavation at SDI-682 in 1959 (True 1958) and a later surveyor suggested this site complex is the ethnographic village of *Tomka* (Crotteau 1981). One site and one isolate are recorded 300-700 meters to the northwest of the project corner. These consist of two flakes and one mano (Wade 2000). All of these sites have been recorded on low slopes above the alluvial valley bottoms and notes on the site record forms consistently note poor visibility due to vegetation.

Historic maps (County Map 1872, U. S. G. S. San Luis Rey quadrangle 30-minute 1901 edition, Temecula quadrangle 15-minute 1942 edition, and Bonsall quadrangles 7. 5 minute 1948 editions) and the 1928 and 1953 aerial photographs on file at the County of San Diego Cartographic Services Department were reviewed. By the turn of the twentieth century widespread roads accessed the agricultural areas in the valley. By 1901, roads are shown along the western edge of the property and across the northern portion. A structure is shown at the later Rancho San Luis Rey east of the project property. Although it is unclear from the 1901 map whether there is a structure accessed by the northern roads, by 1928 two farmsteads are shown on the property (one in the north and one in the center) as well as Rancho San Luis Rey adjacent to the southeast. By this time as well, the southern two-thirds and the majority of the northern one-third of the property were developed intensively in hayfields. By the 1940s, agricultural use had expanded to include orchards on the eastern slopes with hay fields remaining in the bottomlands. In the 1950s, several reservoirs were added to the one present in the 1920s as well as two more residential complexes on the north and one more in the south. With the exception of one of the northern 1950s houses, the structures from the early and mid twentieth-century have been razed and the northern orchards and fields left fallow. Only domestic trees and some archaeological materials remain to identify their former locations.

The record searches from San Diego State University-South Coastal Information Center and the San Diego Museum of Man revealed that the southern approximately two-thirds of the property has been surveyed twice in the past, by Westec Services (Breece 1979) and by RECON (Hector 1982). The Breece survey employed survey transects of 12-15 meters with surveyors zigzagging as needed to inspect areas of interest. Breece states that the "terrain being covered was either recently plowed or existed as cleared orange groves. Those few lithic outcrops that were encountered during the course of the survey were carefully inspected to determine the presence or absence of any bedrock mortars/slicks or native rock art. In addition, all erosional channels were checked for possible subsurface deposits that had not been manifested as surface distributions" (Breece 1979:D-11). Although two isolates were discovered (one mano and one mano fragment), the surveyors re-inspected these areas intensively and found no further cultural evidence. "From this, it can be postulated that both of these are isolates and do not denote a site. A statement of this nature could be viewed as premature if the visibility was poor, or even limited, but under the excellent conditions available the surrounding area could be thoroughly investigated, resulting in negative returns (Breece 1979:D-12). Given the archaeological sensitivity of the area, however, Breece recommended monitoring of initial grading in the area of these isolates by a qualified archaeologist.

The second inspection of the southern portion of the property was conducted by RECON archaeologists in 1982. Because the valley bottom areas had been comprehensively surveyed, the RECON re-survey concentrated on the low ridges above the main drainage. Again, no resources were found and Hector

concluded that "the lack of sites in this area may be due to dense occupation of the San Luis Rey River drainage, scarcity of resources other than water, or steepness of slope above the drainage. The topographically rugged area may have been used for hunting and could not support a more extensive use" (Hector 1982).

In summary, the project property lies within an area of the San Luis Rey River Valley that contains scant, but some important, archaeological remains of the prehistoric inhabitants. Undoubtedly in prehistoric times the area contained abundant water, oaks and chaparral plant resources, game, and hospitable terrain. However, the area was early the focus of historic settlement and the former Rancho Monserate was heavily developed in agriculture by the turn of the twentieth century. The few archaeological surveys completed within a one-mile radius have discovered few remains of the prehistoric inhabitants, undoubtedly partially due to over a century of agricultural disturbance. Historically, few remnants of the late nineteenth century and early twentieth-century agriculture activities have survived to the present day.

Field Survey

The archaeological fieldwork was completed on May 25, 2003. Because the southern two-thirds of the property had been surveyed twice previously, this area was driven through to assess any changes in status. In contrast to the 1979 survey conditions when the fields were freshly disked, the bottomlands are currently covered in grass fields. Orchards are still present on the eastern slopes. The property is crossed by roads, some severely cut into the steep eastern slopes. Given the excellent survey conditions and thorough field surveys conducted in 1979 and 1982 and the current weedy conditions, no re-survey of the southern two-thirds of the property was deemed warranted. The northern one-third of the property had not been previously surveyed and the survey effort focused on this portion of the property.

Three survey transects began on the hills at the north-central portion of the property and progressed south to a dirt road that divides the northern and southern portions of the property. As illustrated by the 1928 and 1953 aerial photographs this area has been in agriculture—hayfields and orchards—for at least eight decades. The topography is rocky and characterized by old furrows. Heavily eroded gullies run east to west wherever water has found a way downslope. Most problematic, however, was the extreme growth of weeds and brush that have taken over the fallow lands. A dense thicket of thistle, mustard, oats, and other weeds are three-to-five feet tall across the dry areas, and anise, vines, poison oak, and dead trees and brush are present in the gullies. A few native sumac and regrowth species such as buckwheat and bacharis, as well as grassy weeds, are present on the rocky slopes and knolls.

Discovered on the eastern slopes, south of the southernmost and largest drainage, are the archaeological remains of the upper two structure complexes identified on the historic maps and aerial photographs. The lower third structure location is the site of a standing and occupied building. At the middle complex, the remains of a well, building debris, a power pole, and pepper and eucalyptus trees were discovered across several graded and overgrown pads where indicated by the 1928 aerial photograph. Much building debris, such as plaster, roofing material, tiles, concrete, and wood, had been pushed into the adjacent gully. Remains of the upper structure complexes and the pad at the lower complex reflect locations shown on the 1953 aerial photograph. A building on the lower third pad was occupied at the time of the survey, and several small sheds and storage structures have been added. None of the current structures appear to be the original structures shown on the 1953 aerial photograph (one is reportedly a modular structure); they are of no architectural distinction or significance. A graded pad northeast of the structures probably reflects the former locations of circa- 1953 structures or outbuildings.

The return transects to the north employed wider spaced intervals due to the difficult topography and dense vegetation cover. One trash dump was discovered in a wide gully just north of the existing building on the lower third pad noted above. Screw top bottles and plastic containers demonstrate the recent origins of this trash. At the completion of the north bound transects, the remainder of the survey focused on inspection of the ridge and knoll tops at the northwestern portion of the survey area. These areas were also extensively covered in weeds with occasional stands of sumac and other shrubs; however, some surface visibility was possible. Bedrock outcrops were inspected with no results and sufficient visibility was present on these ridge tops to conclude that no prehistoric materials are present.

In summary, because of the comprehensive surveys conducted in 1979 and 1982 on the southern two- thirds of the property and because of the extensive vegetation cover currently, no re- survey of this area was deemed necessary. The previously conducted surveys discovered only two isolated artifacts and no archaeological sites. Historic research and review of maps suggest that archaeological remains of the early structure complex in the central portion of the property could still be present. The current survey undertaken for the northern one- third of the property was hampered by the extreme agricultural disturbance that has disrupted nearly all areas of the property. Surveyors encountered an eroded and furrowed ground surface with deep water- eroded gullies and a dense weed cover that severely restricted surface visibility. No prehistoric sites were discovered on this portion of the property. However, the demolition remains of one structural area shown on the 1928 aerial photograph were relocated, as well as recent structures and a pad shown on the 1953 aerial photograph. One standing structure is in the lowest location where structures are shown on the 1953 aerial photograph. The standing structure is reportedly a modular building and has no architectural significance. The only historic trash deposits located date to the post- 1940s occupation of the

property. The post-1940s structural-demolition debris and recent structures and trash deposits contain no architectural or informational value to qualify as significant under CEQA or County criteria.

Conclusions

The research and field studies have demonstrated that, although important prehistoric resources have been documented in the project vicinity, discovery of sites has been hampered by historic land alterations and dense vegetation. As well, it is possible that archaeological deposits could be buried in alluvial depositional situations in the valley bottomlands. The historic research revealed the early-twentieth-century agricultural use of the property. The field surveys previously conducted on the southern two-thirds of the property employed ample survey transect coverage and encountered excellent surface visibility. Only two isolates were discovered; however, the project archaeologist recommended monitoring of grading activities to ensure that additional site deposits were not present. Unfortunately, the current survey of the northern portion of the property encountered poor surface visibility conditions because of dense weedy vegetation and steep eroded topography. Although no prehistoric sites and no potentially significant historic artifact deposits were located, it is possible that these could be present but undiscoverable due to poor survey conditions or alluvial deposition.

The California Environmental Quality Act (CEQA), Sections 21083.2 of the statues and 15064 of the Guidelines, and the County's Resource Protection Ordinance and Draft Report Format and Content Requirements-Cultural Resources Archaeological and Historical Resources, require identification of potentially significant cultural resources, evaluation according to CEQA and County significance criteria, and preservation or mitigation in the form of data recovery. Because the possibility remains for the presence of obscured or buried potentially significant cultural resources, an archaeological monitoring program is recommended to ensure compliance with these requirements. Archaeological monitoring would be most important for the northern one-third portion of the property as well as the southwestern alluvial areas. In response to County-consultation with local Native American groups pursuant to Government Code 65352.3 (Senate Bill 18), the San Luis Rey Band of Luiseño Indians has requested that all ground-disturbing activities be monitored for cultural resources. Therefore, during initial brushing, debris clearing, and grading of all areas of the project property, an archaeologist and Native American monitor should be present to ensure that if potentially significant deposits are uncovered, they are evaluated for significance and adequate preservation or data recovery tasks are implemented.

The grading monitoring plan shall consist of the following:

Prior to Approval of Grading or Improvement plans, the subdivider shall:

A. Implement a grading monitoring and data recovery program to mitigate potential impacts to undiscovered buried archaeological resources on the Campus Park/ Passerelle Project (GPA03-004/ REZ03-014/ SPA03-008/ TM5338/ Log No. 03-02-059) to the satisfaction of the Planning Director. This program shall include, but shall not be limited to, the following actions:

1. Provide evidence to the Department of Planning and Land Use that a County certified archaeologist has been contracted to implement a grading monitoring and data recovery program to the satisfaction of the Director of Planning and Land Use (DPLU). A letter from the Project Archaeologist shall be submitted to the Director of Planning and Land Use. The contract shall include the following guidelines:

a. The consulting archaeologist shall ensure that a Native American monitor will be involved with the grading monitoring program.

b. The County certified archaeologist/ historian and Native American monitor shall attend the pre-grading meeting with the contractors to explain and coordinate the requirements of the monitoring program.

c. The consulting archaeologist shall monitor all areas identified for development.

d. An adequate number of monitors (archaeological/ historical/ Native American) shall be present to ensure that all earth-moving activities are observed and shall be on-site during all grading activities.

e. During the original cutting of previously undisturbed deposits, the archaeological monitor(s) and Native American monitor(s) shall be onsite full-time to perform full-time monitoring as determined by the Principle Investigator of the excavations. The frequency of inspections will depend on the rate of excavation, the materials excavated, and the presence and abundance of artifacts and features. The frequency of inspections will be determined by the Principal Investigator in consultation with the Native American monitor.

f. Isolates and clearly non-significant deposits shall be minimally documented in the field and the monitored grading can proceed.

g. In the event that previously unidentified potentially significant cultural resources are discovered, the archaeologist shall have the authority to divert or temporarily halt ground disturbance operations in the area of discovery to allow evaluation of potentially significant cultural resources. The archaeologist shall contact the County Archaeologist at the time of discovery. The archaeologist, in consultation with County staff archaeologist, shall determine the significance of the discovered resources. The County Archaeologist must concur with the evaluation before construction activities will be allowed to resume in the affected area. For significant cultural resources, a Research Design and Data Recovery Program to mitigate impacts shall be prepared by the consulting archaeologist and approved by the County Archaeologist, then carried out using professional archaeological methods.

h. If any human bones are discovered, the Principle Investigator shall contact the County Coroner. In the event that the remains are determined to be of Native American origin,

the County Coroner shall contact the Native American Heritage Commission. The Most Likely Descendant, as identified by the Native American Heritage Commission, shall be contacted in order to determine proper treatment and disposition of the remains. The Principal Investigator shall follow up with the County Coroner and the Native American Heritage Commission to ensure that these steps have been completed.

i. Before construction activities are allowed to resume in the affected area, the artifacts shall be recovered and features recorded using professional archaeological methods. The Principle Investigator shall determine the amount of material to be recovered for an adequate artifact sample for analysis.

j. In the event that previously unidentified cultural resources are discovered, all cultural material collected during the grading monitoring program shall be processed and curated according to current professional repository standards. The collections and associated records shall be transferred, including title, to an appropriate curation facility within San Diego County, to be accompanied by payment of the fees necessary for permanent curation. Evidence shall be in the form of a letter from the curation facility identifying that archaeological materials have been received and that all fees have been paid.

k. In the event that previously unidentified cultural resources are discovered, a report documenting the field and analysis results and interpreting the artifact and research data within the research context shall be completed and submitted to the satisfaction of the Director of Planning and Land Use prior to the issuance of any building permits. The report will include Department of Parks and Recreation Primary and Archaeological Site forms.

l. In the event that no cultural resources are discovered, a brief letter to that effect shall be sent to the Director of Planning and Land Use by the consulting archaeologist that the grading monitoring activities have been completed.

B. Provide Evidence to the Director of Planning and Land Use that the following notes have been placed on the Grading Plan:

1. The County certified archaeologist/ historian and Native American monitor shall attend the pre- construction meeting with the contractors to explain and coordinate the requirements of the monitoring program.

2. During the original cutting of previously undisturbed deposits, the archaeological monitor(s) and Native American monitor(s) shall be onsite full- time to perform full- time monitoring as determined by the Principle Investigator of the excavations. The frequency of inspections will depend on the rate of excavation, the materials excavated, and the presence and abundance of artifacts and features. The frequency of inspections will be determined by the Principal Investigator in consultation with the Native American monitor.

3. In the event that previously unidentified potentially significant cultural resources are discovered, the archaeological monitor(s) shall have the authority to divert or temporarily halt ground disturbance operation in the area of discovery to allow evaluation of potentially significant cultural resources. The Principle Investigator shall contact the County Archaeologist at the time of discovery. The Principle Investigator, in consultation with County staff archaeologist, shall determine the significance of the discovered resources. The County Archaeologist must concur with the evaluation before construction activities will be allowed to resume in the affected area.

For significant cultural resources, a Research Design and Data Recovery Program to mitigate impacts shall be prepared by the consulting archaeologist and approved by the County Archaeologist, then carried out using professional archaeological methods.

4. The consulting archaeologist and Native American monitor shall monitor all areas identified for development.

5. If any human bones are discovered, the Principle Investigator shall contact the County Coroner. In the event that the remains are determined to be of Native American origin, the County Coroner shall contact the Native American Heritage Commission. The Most Likely Descendant, as identified by the Native American Heritage Commission, shall be contacted in order to determine proper treatment and disposition of the remains. The Principal Investigator shall follow up with the County Coroner and the Native American Heritage Commission to ensure that these steps have been completed.

6. Prior to rough grading inspection sign-off, provide evidence that the field grading monitoring activities have been completed to the satisfaction of the Director of Planning and Land Use. Evidence shall be in the form of a letter from the Project Archaeologist.

7. Prior to Final Grading Release, submit to the satisfaction of the Director of Planning and Land Use, a final report that documents the results, analysis, and conclusions of all phases of the Archaeological Monitoring Program. The report shall also include the following:

a. Department of Parks and Recreation Primary and Archaeological Site forms.

b. Evidence from a curation facility within San Diego County that all cultural material collected during the grading monitoring program has been received for curation accompanied by payment of the fees necessary for permanent curation.

In the event that no cultural resources are discovered, a brief letter to that effect shall be sent to the Director of Planning and Land Use by the consulting archaeologist that the grading monitoring activities have been completed.

Or

Enter into a Secured Agreement with the County of San Diego, Department of Planning and Land Use, secured by a letter of credit, bond, or cash for 100 percent of the estimated costs associated with the preparation of the Final Report that documents the results, analysis, and conclusions of all phases of the Archaeological Monitoring Program, and a 10 percent cash deposit not to exceed $30,000. A cost estimate shall be submitted and approved by the Director of Planning and Land Use for the cost of preparing the Final Grading Monitoring Report that includes artifact analysis, and specialized studies such as lithics analysis, ceramics analysis, faunal analysis, floral analysis, assemblage analysis, and radiocarbon dating as determined by the Project Archaeologist in consultation with County Staff Archaeologist.

C. Prior to recordation of the Final Map, the applicant shall:

1. Complete and submit a final report that documents the results, analysis, and conclusions of all phases of the Archaeological Monitoring Program to the satisfaction of the Director of Planning and Land Use. The report shall also include the following:

a. Department of Parks and Recreation Primary and Archaeological Site forms.

b. Evidence from a curation facility within San Diego County that all cultural material collected during the grading monitoring program has been received for curation accompanied by payment of the fees necessary for permanent curation.

In the event that no cultural resources are discovered, a brief letter to that effect shall be sent to the Director of Planning and Land Use by the consulting archaeologist that the grading monitoring activities have been completed.

Or

Enter into a Secured Agreement with the County of San Diego, Department of Planning and Land Use, secured by a letter of credit, bond, or cash for 100 percent of the estimated costs associated with the preparation of the Final Report that documents the results, analysis, and conclusions of all phases of the Archaeological Monitoring Program, and a 10 percent cash deposit not to exceed $30,000. A cost estimate shall be submitted and approved by the Director of Planning and Land Use for the cost of preparing the Final Grading Monitoring that includes artifact analysis, and specialized studies such as lithics analysis, ceramics analysis, faunal analysis, floral analysis, assemblage analysis, and radiocarbon dating as determined by the Project Archaeologist in consultation with County Staff Archaeologist.

Implementation of the above-described monitoring program will ensure compliance with the California Environmental Quality Act (CEQA), Sections 21083.2 of the statues and 15064 of the Guidelines, the County's Resource Protection Ordinance and Draft Report Format and Content Requirements-Cultural Resources Archaeological and Historical Resources, and Government Code 65352.3 (Senate Bill 18), and will ensure that no significant impacts to prehistoric or historic resources on the property will occur as a result of the project development.

I hope this letter provides you with the information needed to complete the cultural resources review for this project. Please call me if you have any questions regarding the work completed or our findings.

Sincerely,

Sue A. Wade
Archaeologist-Historian

cc: Mr. David Davis, Passerelle LLC
Ms. Karen Brand, Helix Environmental

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1989 A Cultural Resource Survey of the Santa Margarita River from Temecula to the Pacific Ocean. Unpublished manuscript prepared for J. M. Montgomery, Consulting Engineers, Inc. by RECON, on file with the author.
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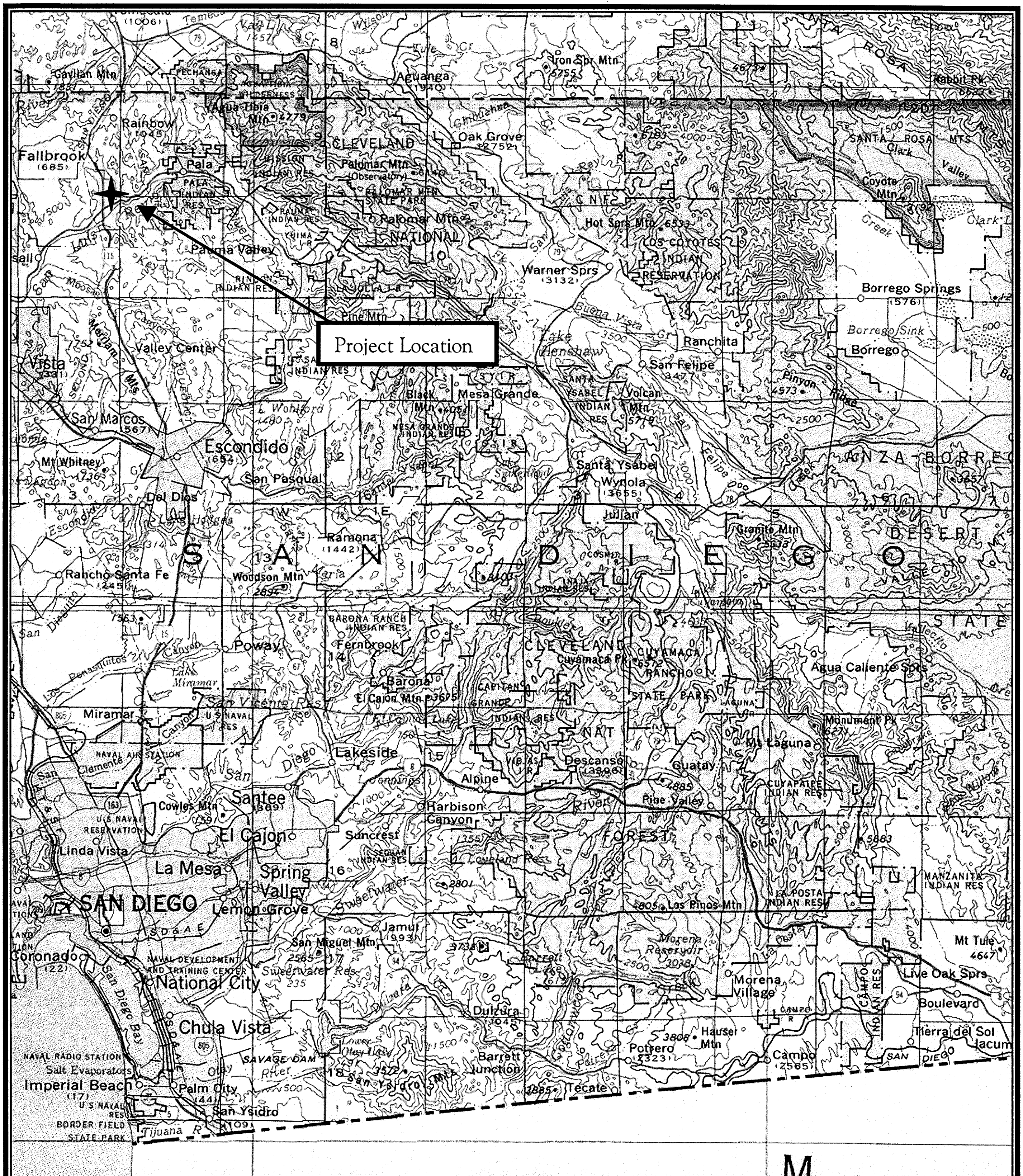

FIGURE 1: PROJECT LOCATION
SOUTHERN CALIFORNIA U.S.G.S. MAP

0 miles 8.5 **N**

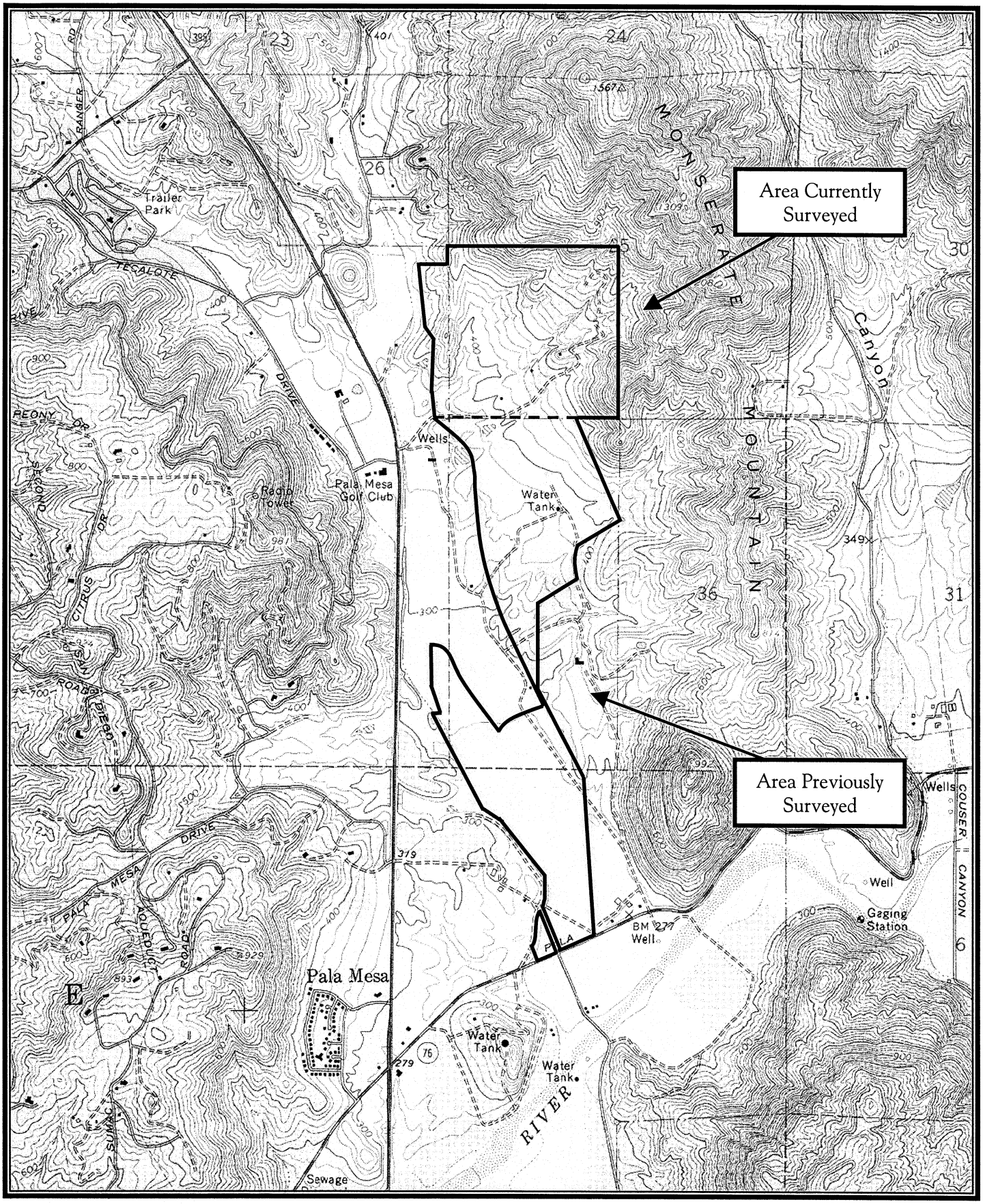

FIGURE 2: PROJECT LOCATION:
TEMECULA and BONSALL
U.S.G.S. 7.5-MINUTE MAPS

0 feet 2000

N

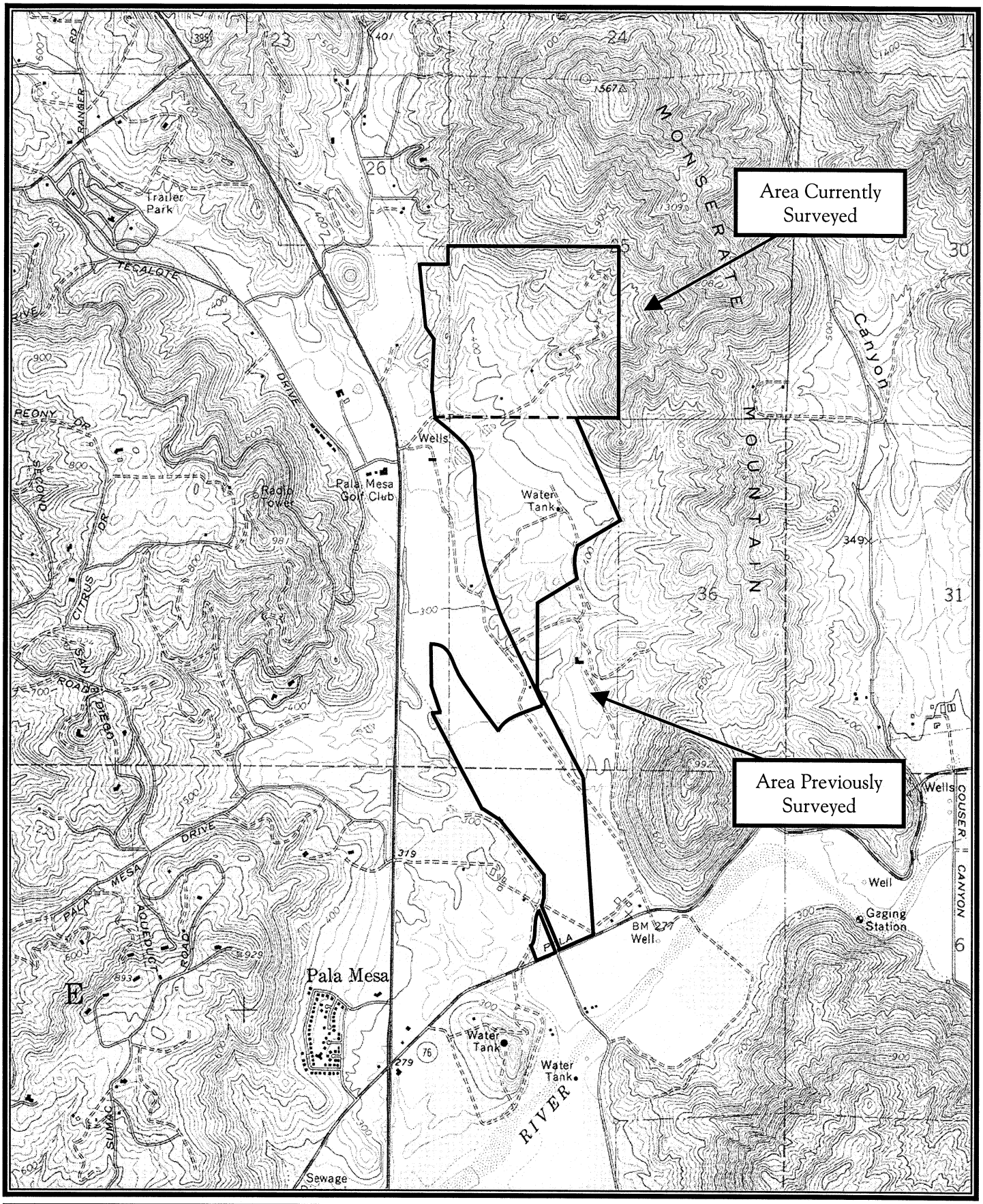

FIGURE 3: PROJECT SURVEY AREAS: TEMECULA and BONSALL U.S.G.S. 7.5-MINUTE MAPS

0 feet 2000

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Attachment
Native American consultation correspondence

GARY L. PRYOR
DIRECTOR

County of San Diego

DEPARTMENT OF PLANNING AND LAND USE

5201 RUFFIN ROAD, SUITE B, SAN DIEGO, CALIFORNIA 92123-1666
INFORMATION (858) 694-2960
TOLL FREE (800) 411-0017

SAN MARCOS OFFICE
338 VIA VERA CRUZ • SUITE 201
SAN MARCOS, CA 92069-2620
(760) 471-0730

EL CAJON OFFICE
200 EAST MAIN ST. • SIXTH FLOOR
EL CAJON, CA 92020-3912
(619) 441-4030

March 18, 2005

Ms. Carol Gaubatz
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

RE: Sacred Lands Check; Campus Park/Passerelle; GPA03-004/REZ03-014/ SPA03-008/TM5338/Log No. 03-02-059;
APN 108-120-47, 108-120-49, 108-120-50, 108-120-51, 108-121-12, 108-121-13, 108-421-03, 108-421-04, 125-061-02, 125-061-03;
Section: Monserate Land Grant; Township; 9S, Range: 03W

Dear Ms. Gaubatz:

The County of San Diego requests your participation in the environmental review process of the proposed development project for Campus Park/Passerelle (GPA03-004/REZ03-014/SPA03-008/TM5338/Log No. 03-02-059), located approximately ½ mile east of Interstate 15 and is north of Pala Road, San Diego, CA. Pankey Road runs through the southern portion of the project. This project proposes a major subdivision of 500 acres into 950 homesites ranging in size from 3000 to 5500 square feet that will include both equestrian and pedestrian trails. In addition, a commercial component consisting of a professional office park and town center are also proposed. The project is subject to the California Environmental Quality Act (CEQA), the County of San Diego Resource Protection Ordinance (RPO), and Section 65352.3 of the Government Code (Senate Bill 18 [2004]). The County of San Diego is seeking information about tribes that are on the "SB 18 Consultation List", and we are requesting your assistance in identifying cultural resources including sacred lands that may be present on site.

As part of the environmental review for this project, an institutional records search and a cultural resources survey has been required. If resources are present, testing will be requested to determine significance pursuant to the California Environmental Quality Act and the County of San Diego Resource Protection Ordinance (RPO). If the cultural resources are determined significant, mitigation must be proposed which may include

the placement of the resources in an open space easement, or in some cases, data recovery excavations may be conducted as an alternative.

The County will forward a copy of the environmental document and cultural resources report for your comment during the public review period. We feel that your comments regarding decisions that may affect ancestral tribal sites are very important, and welcome input that you may have regarding consultation with affected tribes.

If you have any questions, I can be reached at (858) 694-3656.

Sincerely,

Donna Beddow

Donna Beddow, RPA
Staff Archaeologist

DB:db

Attachment
USGS Topographical Map – Temecula and Bonsall

cc: David Davis, Passerelle, LLC, 402 West Broadway, Suite 2175, San Diego, Ca 92101
Steven Cresto Engineering, 9620 Chesapeake Drive, Suite 207, San Diego, CA 92123
Chris Brown, Alchemy Consulting Group, 402 West Broadway, Suite 2175, San Diego, CA 92101
Sue Wade, Heritage Resources, P.O. Box 8, Ramona, CA 92065
Chantal Saipe, Tribal Liaison, Chief Administrative Office, M.S. A-6
Sami Raya, Project Manager, Department of Planning and Land Use, M.S. 0650

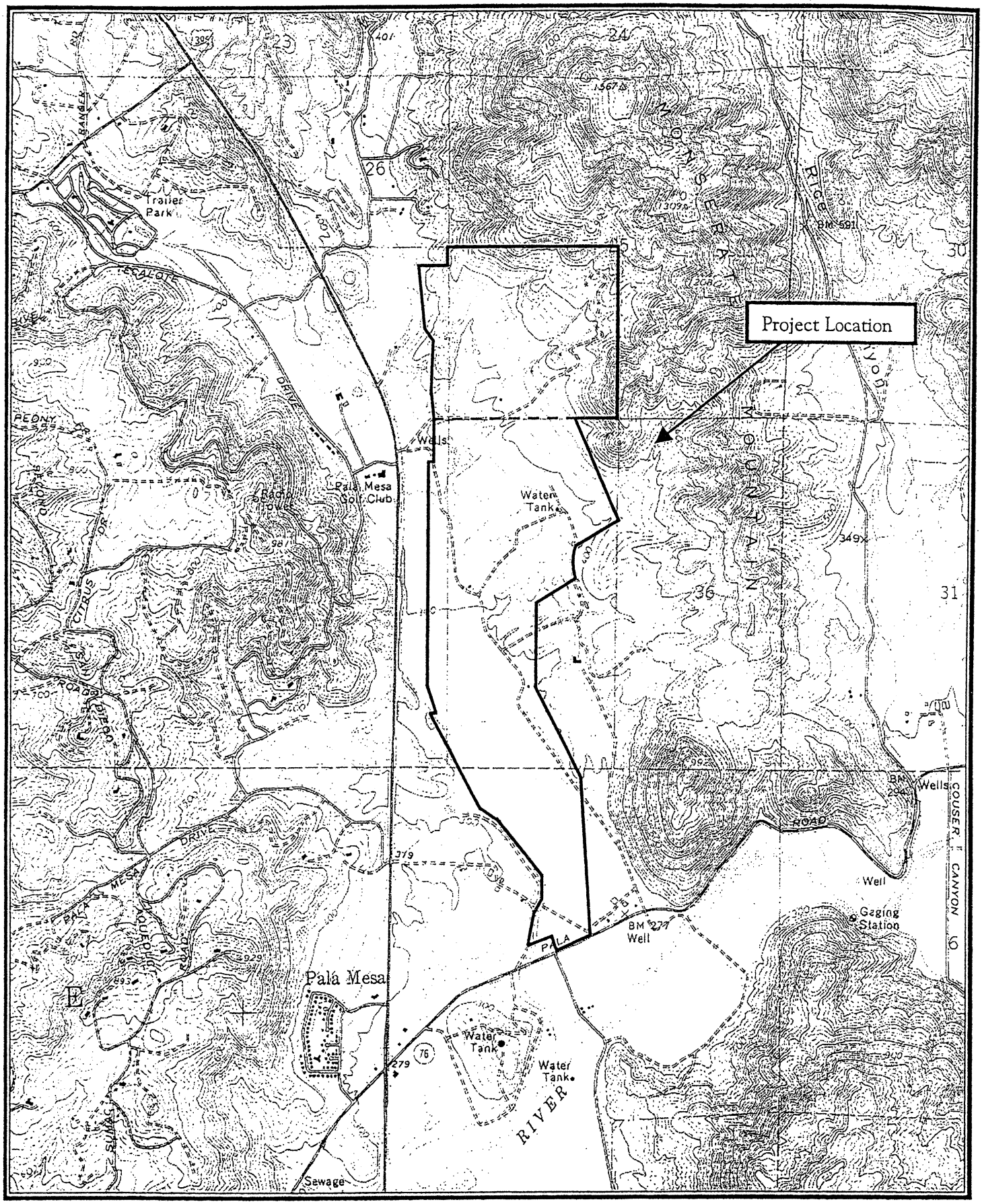

FIGURE 2: PROJECT LOCATION:
TEMECULA and BONSALL
U.S.G.S. 7.5-MINUTE MAPS

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GARY L. PRYOR
DIRECTOR

County of San Diego

DEPARTMENT OF PLANNING AND LAND USE

5201 RUFFIN ROAD, SUITE B, SAN DIEGO, CALIFORNIA 92123-1666
INFORMATION (858) 694-2960
TOLL FREE (800) 411-0017

SAN MARCOS OFFICE
338 VIA VERA CRUZ • SUITE 201
SAN MARCOS, CA 92069-2620
(760) 471-0730

EL CAJON OFFICE
200 EAST MAIN ST. • SIXTH FLOOR
EL CAJON, CA 92020-3912
(619) 441-4030

April 8, 2005

Cupa Cultural Center
Mr. William Contreras, Archaeology and Cultural Resources
La Jolla Band of Luiseno Indians
Mr. Tracy Lee Nelson, Chairman
Mr. Rob Roy, Environmental Director
Pala Band of Mission Indians
Mr. Robert Smith, Chairman
Ms. Lenore Volturno, EPA
Pauma/Yuima Band of Mission Indians
Mr. Christobal C. Devers Sr., Chairman
Ms. Bennae Calac, Cultural Resources Coordinator
Ms. Juanita Dixon, Environmental Coordinator
EPA Director
Pechanga Band of Mission Indians
Mr. Mark Macarro, Chairperson
Mr. Paul Macarro, Cultural Resource Center
Ms. Laura Miranda, Deputy General Counsel
Rincon San Luiseno Band of Mission Indians
Mr. John Currier, Chairman
Mr. Rob Shaffer, Tribal Administrator
Ms. Ruth Calac, Heritage Commission
Ms. Kristi Orosco, Environmental Coordinator
San Luis Rey Band of Mission Indians
Mr. Russell Romo, Chairman
Ms. Carmen Mojado, Co-Chair
Mr. Mark Mojado, Cultural Resources
Mr. Henry Contreras, Most Likely Descendent
Soboba Band of Mission Indians
Mr. Robert Salgado, Sr., Chairperson
Twenty-Nine Palms Band of Mission Indians
Mr. Dean Mike, Chairperson

RE: Campus Park/Passerelle; GPA03-004/REZ03-014/SPA03-008/TM5338/ Log No. 03-02-059; NATIVE AMERICAN CULTURAL RESOURCES CONSULTATION; Section: Monserate Land Grant; Township: 9S; Range: 03W; Thomas Brothers:1028 J/5

The County of San Diego (County) requests your participation in the review process of the Campus Park/Passerelle Subdivision (GPA03-004/REZ03-014/SPA03-008/ TM5338/Log No. 03-02-059). This project proposes the subdivision of 500 acres into 950 homesites ranging in size from 300 to 5500 square feet that will include both equestrian and pedestrian trails. It is located approximately ½ mile east of Interstate 15 and is north of Pala Road (APN# 108-120-47, 108-120-49, 108-120-50, 108-120-51, 108-121-12, 108-121-13, 108-421-03, 108-421-04, 125-061-02, 125-061-03) in the community planning area of Fallbrook and is subject to the California Environmental Quality Act (CEQA), the County of San Diego Resource Protection Ordinance (RPO), and Section 65352.3 of the Government Code (Senate Bill 18 [2004]). Staff contacted the Native American Heritage Commission (NAHC) who has requested that we consult with you directly regarding the potential for the presence of Native American cultural resources that may be impacted by this project. The project is currently in the process of environmental review. As such, a cultural resources survey has been requested to determine the absence and/or presence of cultural resources.

Any information you have regarding cultural places will be kept strictly confidential and will not be divulged to the public. Although we are providing to you for the purposes of your review this confidential information regarding the location of cultural places, this information is not available to the public.

The County of San Diego feels that your comments regarding decisions that may affect ancestral tribal sites are very important. Please forward any comments regarding this project to Donna Beddow by July 7, 2005.

If you have any questions, you can reach me at (858) 694-3656.

Sincerely,

Donna Beddow

Donna Beddow, RPA
Staff Archaeologist

DB:db

Attachment
USGS Temecula and Bonsall Map

cc: David Davis, Passerelle, LLC, 402 West Broadway, Suite 2175, San Diego, Ca 92101
Steven Cresto Engineering, 9620 Chesapeake Drive, Suite 207, San Diego, CA 92123
Chris Brown, Alchemy Consulting Group, 402 West Broadway, Suite 2175, San Diego, CA 92101
Sue Wade, Heritage Resources, P.O. Box 8, Ramona, CA 92065
Alyssa Maxson, Project Manager, Department of Planning and Land Use, M.S. 0650
Chantal Saipe, Tribal Liaison, Chief Administrative Office, M.S. A-6

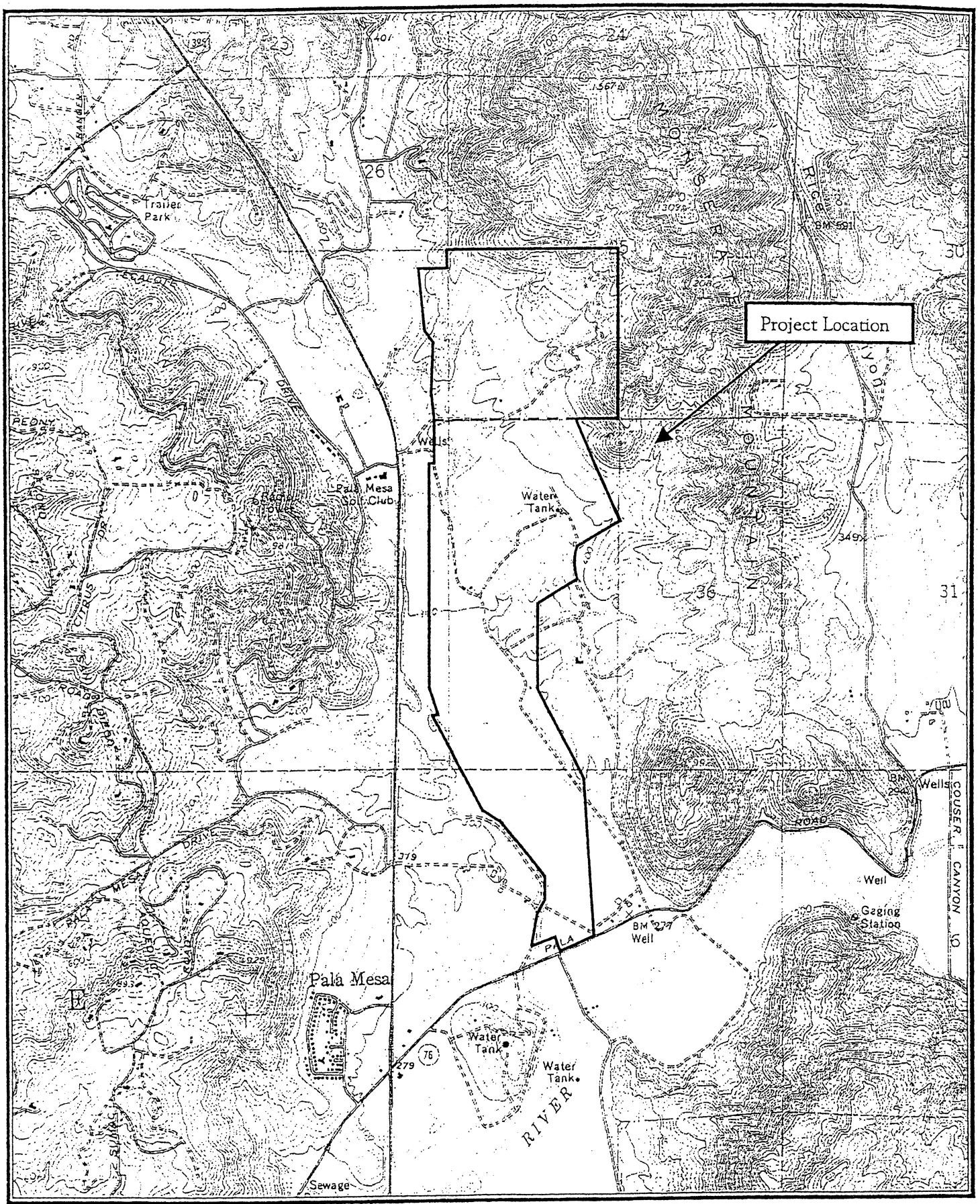

FIGURE 2: PROJECT LOCATION:
TEMECULA and BONSALL
U.S.G.S. 7.5-MINUTE MAPS

0 feet 2000

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GARY L. PRYOR
DIRECTOR

County of San Diego

DEPARTMENT OF PLANNING AND LAND USE

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EL CAJON, CA 92020-3912
(619) 441-4030

December 1, 2005

San Luis Rey Band of Mission Indians
2302 Carriage Circle
Oceanside, CA 92056
Attn: Ms. Carmen Mojado

RE: Campus Park/Passerelle Native American Consultation Response; GPA03-004/REZ03-014/SPA03-008/TM5338/Log No. 03-02-059

Dear Ms. Mojado:

The County of San Diego (County) appreciates your participation in the review process of the Campus Park/Passerelle project (GPA03-004/REZ03-014/SPA03-008/TM5338). This project proposes a major subdivision of 500 acres into 950 homesites. It is located approximately ½ mile east of Interstate 15 and is north of Pala Road in the community planning area of Fallbrook. Pursuant to your letter (attached) concerns and comments include the following:

Disturbance or destruction of cultural sites.

A cultural resource study has been completed that identified only two prehistoric isolates (mano, mano fragment) within the project footprint; no prehistoric sites were identified. Mitigation required by the Environmental Impact Report will include the requirement for grading monitoring by a qualified archaeologist. A requirement for a Native American representative present during the ground disturbing activities will also be included. In addition, the county will ensure that the San Luis Rey Band of Mission Indians be sent environmental documents during the Public Review Process.

Any information you have regarding cultural places will be kept strictly confidential and will not be divulged to the public. Although we may provide you with site information for the purposes of your review, this confidential information regarding the location of cultural places is not available to the public.

The County of San Diego feels that your comments regarding decisions that may affect ancestral tribal sites are very important and we thank you for your response. If you have any further questions or comments, you can reach me at (858) 694-3003.

Sincerely,

Donna Beddow

Donna Beddow, RPA
Staff Archaeologist

DB:db

Attachment
Letter from the San Luis Rey Band of Mission Indians

cc: David Davis, Passerelle, LLC, 402 West Broadway, Suite 2175, San Diego, Ca 92101
Steven Cresto Engineering, 9620 Chesapeake Drive, Suite 207, San Diego, CA 92123
Chris Brown, Alchemy Consulting Group, 402 West Broadway, Suite 2175, San Diego, CA 92101
Sue Wade, Heritage Resources, P.O. Box 8, Ramona, CA 92065
Mark Mojado, P.O. Box 1, Pala, CA 92059
Alyssa Maxson, Project Manager, Department of Planning and Land Use, M.S. 0650
Chantal Saipe, Tribal Liaison, Chief Administrative Office, M.S. A-6

G. WRIGHT

SAN LUIS REY BAND OF MISSION INDIANS

2302 Carriage Circle, Oceanside, CA 92056 • Tel. 760/724-8505 • FAX 760/967-6357

RE: Sites in San Luis Rey Territory

SUBJECT: NATIVE AMERICAN TRIBAL CONCERNS

The San Luis Rey Band of Mission Indians appreciates your communication with us. Our cultural resources are of great concern and importance to us. If any potential disturbance or destruction on this particular site or other sites within our area, consultation and mitigation will be required with the Cultural Department of the San Luis Rey Band of Mission Indians.

Our contact person on the Cultural Department is Mark Mojado. He will be the person to be contacted if monitoring will be required on the site/s involved. He can be reached at 760-742-4468 or 760-724-8505. (760-742-4858 cell)

The San Luis Rey Band of Mission Indians thanks you for your cooperation, concerns, and respect for our cultural resources and for our ancestors.

Sincerely,

Carmen Mojado
Secretary/Co-Chair

cc: rr
mm

PLEASE SEE ATTACHED LIST OF SITES THAT WILL BE NEEDED TO CONSULT WITH THE SAN LUIS REY BAND. THANK YOU.

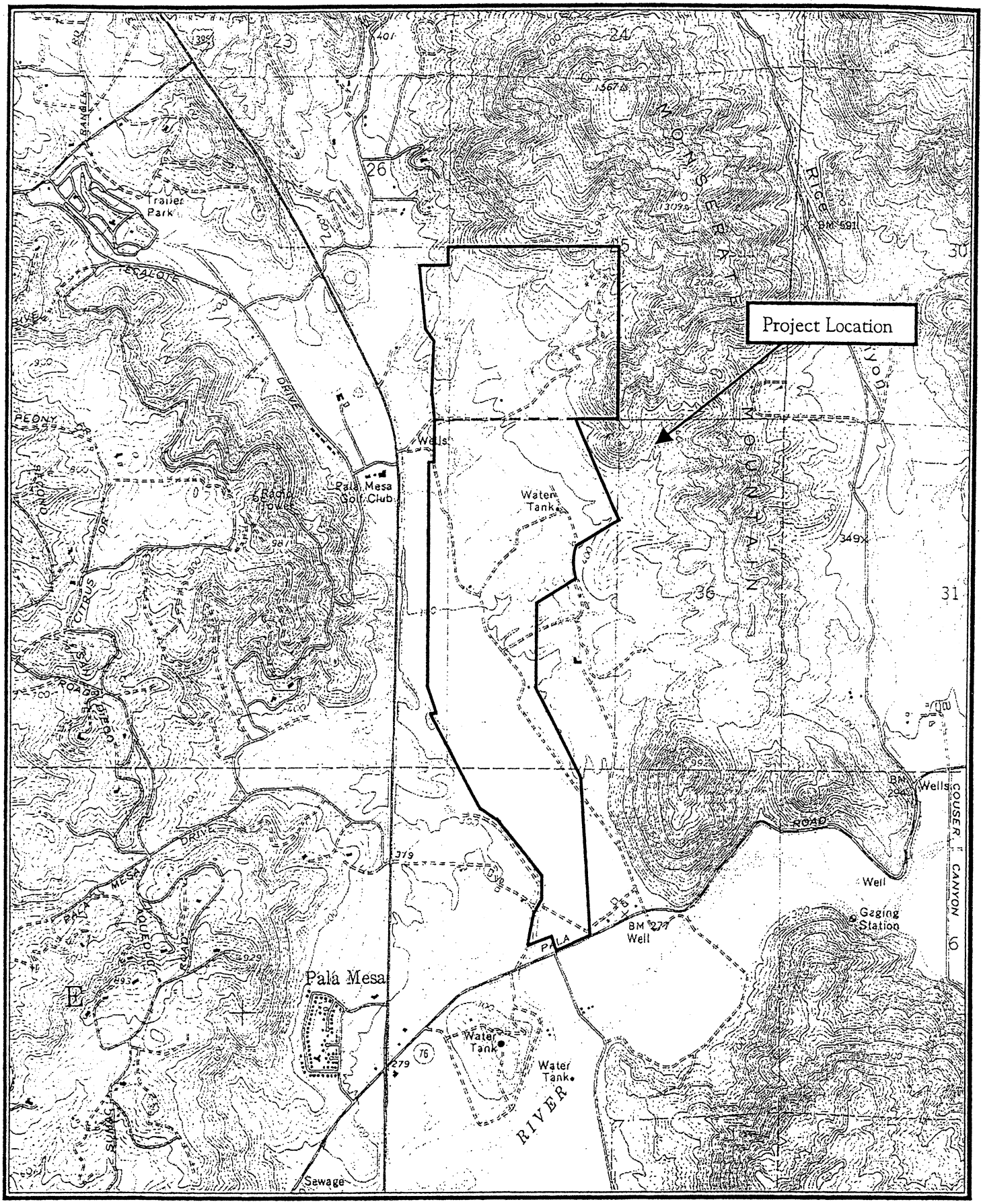

FIGURE 2: PROJECT LOCATION:
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2009 CULTURAL RESOURCE SURVEY

CULTURAL RESOURCE SURVEY

SPA 03-008, TM 5338 RPL6, GPA 03-04, RO3-014, LOG NO. 03-02-059

May 20, 2009

CAMPUS PARK PROJECT

Prepared for:

Passerelle, LLC

Prepared by:

Sue Wade
Heritage Resources
P.O. Box 8
Ramona, CA 92065

Heritage Resources

P.O. Box 8 ❖ Ramona, CA 92065 ❖(760) 789-8509

May 20, 2009

Dr. Glenn Russell
County of San Diego
Department of Planning and Land Use
5201 Ruffin Road, Suite B
San Diego, CA 92123-1666

Reference: Campus Park/Passerelle (GPA03-004/REZ03-014/SPA03-008/TM5338/Log No. 03-02-059): off-site road improvements cultural resource survey

Dear Dr. Russell:

This letter describes the research and field survey performed for the Campus Park/Passerelle (GPA03-004/REZ03-014/SPA03-008/TM5338/Log No. 03-02-059) project off-site road improvements (Figures 1 and 2). The archaeological tasks are those required by the California Environmental Quality Act (CEQA), Sections 21083.2 of the Statutes and 15064.5 of the Guidelines, the County's Resource Protection Ordinance, and the County's Guidelines for Determining Significance and Report Format and Content Requirements, Cultural Resources: Archaeological and Historical Resources. Tasks included record searches, a review of historic maps, and a field inspection of the improvement areas. The research indicated that most improvement areas had been previously surveyed as a part of previous road and other development projects. These surveys identified prehistoric sites in proximity to the Passerelle proposed off-site improvement areas, but no significant sites within. Historically, most of the improvements area has been in agriculture for at least a century, with the adobe ranch house of Rancho Monserate, early farmsteads, and the Rancho San Luis Rey thoroughbred farm present from the mid-nineteenth century through the mid-twentieth century. The current field inspection for off-site improvements was primarily conducted as a windshield survey to compare the results of the previously conducted surveys to the proposed improvement areas as well as to identify areas that are disturbed by large-scale grading and cultivation. On-the-ground

inspections were only necessary in a few areas that were less disturbed. No significant cultural resources were identified within the proposed off-site improvement areas, although monitoring measures are proposed for improvements near the known location of SDI-682. The following paragraphs detail the research, fieldwork, and monitoring recommendations.

Natural and Cultural Background

The survey area consists of 8 road intersection improvement areas along Pala Road (SR-76) and Old Highway 395. State Route 76 follows the north bank of the San Luis Rey River valley and Old Highway 395 travels north from SR 76 through an unnamed tributary valley to the San Luis Rey. Elevations range from approximately 200 feet above mean sea level (AMSL) at the western extent of improvements in San Luis Rey River valley to approximately 400 feet AMSL at the northern extent of improvements in the unnamed tributary. The improvement areas lie primarily at the edge of alluvial river valleys with granite-underlain slopes on the uphill sides. While the majority of the improvement areas are heavily disturbed, adjacent vegetation consists of coastal sage scrub and chaparral communities on the upslopes and riparian communities in the lowlands.

The improvement areas lie between the Santa Margarita River/Temecula Valley region to the north and the San Luis Rey River Valley region to the south. Historic disturbances have limited the archaeological information that has been gathered for the project area. A large village site has been identified adjacent to the San Luis Rey River Valley at the southwestern base of Monserate Mountain (SDI-682, the Luiseño village of *Tom-Kav*). Surrounding sites are located on low knolls overlooking the drainage and contain midden soils, a variety of artifacts, and sometimes rock art. The archaeological information known about these site complexes suggests that concentrations of occupation focused near major drainage confluences. Surrounding special use sites were sited near natural resources and occupied for short periods during food collecting and processing activities.

The natural grasslands, fertile soils, and reliable water in the surrounding area were not only attractive resource areas for the prehistoric inhabitants, but also for the later Spanish, Mexican, and American ranchers and farmers. As early as 1810, the mission established grain fields and orchards at San Antonio de Pala, six miles to the east, and in the Temecula Valley, nine miles to the north (Brigandi 1999). After the Mexican revolution and subsequent secularization of the missions, ranchos were established to the north in Temecula Valley and to the east at Pauma. The off-site-improvement area was part of Rancho Monserate, granted to Ysidro Maria

Alvarado in 1846. Alvarado, followed by his son Tomas, grazed sheep, cattle, and horses and maintained a lavish household (Rush 1965). The ranch house was reportedly located at the southwestern foot of Monserate Mountain near the village of *Tom-Kav* (Hector et al. 2006). In the late nineteenth century, American-period farming settlement focused on the fertile valleys to the south in Bonsall, to the east in Pala, and to the north in Temecula. By the beginning of the twentieth century, the tributary valley was developed in grain fields and orchards (Van Wormer in Hector 2008, Photographs 1928). Large ranches, developed out of the old Monserate Rancho lands, operated through the mid-twentieth century (Photographs 1953, Maps 1942). These include Rancho San Luis Rey, east of the intersection of I-15 and SR 76, where Charles Cooper raised race horses and later where Edgar and Robert Pankey established a diversified farm enterprise including citrus, avocado, and lima beans, and Duffy Ranch to the northwest (Rush 1965:86-88, Maps 1942). In the 1950s, a portion of the Pankey acreage was bought to create the Pala Mesa suburban development to the west (Rush 1965). Today, portions of the agricultural valley have been developed into a golf course, the former Rancho San Luis Rey and Pankey ranch house complex have fallen into disrepair, and residential development is moving into the previously vacant rugged hills.

Record searches were completed at the San Diego State University-South Coastal Information Center and San Diego Museum of Man. Numerous previous surveys and significance evaluations have been conducted along SR 76 and Old Highway 395 related to proposed highway improvements (Corum 1977; DeCosta 1982; Eckhardt 1978; Fulmer 1984; Hector et al. 2006; Jordan et al. 2006; McGinnis 2007; May 2006; Rosen 1982, 1985a, 1985b, 1987, 1994; Rosen and Crafts 1991; Shalom 2006) with the result that the majority of the Passerelle proposed off-site improvement areas have been surveyed previously. Several surveys have been completed related to large subdivision areas north and south of San Luis Rey River Valley. The majority of known resources have been recorded on low slopes above the alluvial valley bottoms and notes on the site record forms consistently note poor survey conditions due to dense vegetation and rugged terrain.

Historic maps (County Map 1872, U.S.G.S. San Luis Rey quadrangle 30-minute 1901 edition, Temecula quadrangle 15-minute 1942 edition, and Bonsall quadrangles 7.5 minute 1948 editions) and the 1928 and 1953 aerial photographs on file at the County of San Diego Cartographic Services Department were reviewed. By the turn of the twentieth century, widespread roads accessed the agricultural areas in the valley. By 1901, a structure is shown

at the later Rancho San Luis Rey. It is has been suggested by Hector et al. (2006) that this is the likely location of the Rancho Monserate nineteenth-century adobe ranch house. By 1928, numerous farmsteads are shown in the Pala Road and Old Highway 395 area as well as at the location of the later Rancho San Luis Rey at the base of Monserate Mountain. By the 1940s, agricultural use had expanded to include orchards on the steep slopes and hay fields in the bottomlands. In the later half of the twentieth century, the area has remained relatively rural, with subdivision development occurring only within recent decades.

As a result of the previous surveys and evaluations, one cultural resource has been recorded near or within the Passerelle proposed off-site improvement areas. The resource is the former location of the Rancho San Luis Rey thoroughbred breeding farm as well as the presumed location of the nineteenth-century adobe Rancho Monserate ranch house. The area is also the location of SDI-682, presumed to be the ethnographic village of *Tom-Kav*. Although the site was previously known to exist east of the existing ranch road entrance into the Pankey Ranch house complex, recent testing for the Meadowood project by ASM Affiliates, Inc. (Hector et al. 2008), demonstrated that three additional site loci, (two of which were determined significant) exist west of the existing ranch access road. The two significant loci are located within 100 meters west and 50 meters north of the intersection of the existing ranch access road and the existing alignment of SR 76 (which is currently being relocated), within the house building complex. The Meadowood project design for Horse Ranch Creek Road, which is also the design for the off-site improvements for Campus Park project, aligns the road between the two loci, thus avoiding them. Confidential Figure 3 illustrates this alignment in relation to the two SDI-682 loci. Whichever entity constructs Horse Ranch Creek Road will also implement a grading monitoring program in the area of the identified buried loci, in the area where the Rancho Monserate adobe is noted on historic maps, as well as during any ground disturbance south of SR 76. A Monitoring Discovery Plan is recommended to be prepared prior to commencement of construction activity in all areas recommended for monitoring.

In summary, the proposed off-site improvement areas exist within an area of the San Luis Rey River Valley that contains few remaining, but some important, archaeological remains. In prehistoric times the area contained abundant water, oaks and chaparral plant resources, game, and hospitable terrain. However, the area was early the focus of historic settlement and the former Rancho Monserate was heavily developed in agriculture by the turn of the twentieth century. As demonstrated by the above review of the record search information, however,

there are important remnants of prehistoric occupation remaining amid the extensive disturbance. Historically, few remnants of the nineteenth century and early twentieth-century agriculture activities have survived to the present day.

Field Inspection

The field inspection was conducted on July 23, 2008. The field inspection was primarily conducted as a windshield survey to compare the results of the previously conducted surveys to the Passerelle proposed off-site improvement areas as well as to identify areas disturbed by grading, excavation, and cultivation. On-the-ground inspections were only necessary in a few areas that did not fit those criteria as most intersections had been previously surveyed or were extensively disturbed. Table 1 identifies each improvement area, the level of disturbance observed, and any cultural resources associated.

Table 1
Proposed Off-Site Improvement Areas

Improvement Area	Disturbance	Cultural Resource Issues
Old Highway 395 / Pala Road (SR-76)	Commercial, road improvements	None
I-15 SB onramp / Pala Road (SR-76)	Agriculture, road improvements	None
I-15 NB onramp / Pala Road (SR-76)	Agriculture, road improvements	None
Pankey Road / Pala Road (SR-76)	Agriculture	None
Horse Ranch Creek Road / Pala Road (SR-76)	Agriculture, road construction	SDI-16,890 (not significant) SDI-682 buried remains (significant) Outside of improvement area (Confidential Figure 3) Rancho Monserate adobe possible remains subsurface (significant) Monitoring required
Old Highway 395 / Pala Mesa Drive	Residential, road improvements	None
Old Highway 395 / Stewart Canyon	Grading, road improvements	None
Old Highway 395 / Reche Road	Drainage, cut slope	None

As can be seen in Table 1, cultural resources have been recorded at one intersection, Horse Ranch Creek Road and Pala Road (SR 76).

Prehistoric site CA-SDI-682 is located north of the intersection of proposed Horse Ranch Creek Road and existing Pala Road (SR-76). Because SR-76 will be realigned to the south, the proposed Horse Ranch Creek Road improvement area will be south of the current intersection where remains of CA-SDI-682 are located on the north side. The Pala Road (SR-76) realignment was previously surveyed (Jordan et al. 2006) and no cultural resource sites were recorded. The Horse Ranch Creek Road improvement area is currently developed in orchards and highly disturbed. The planned alignment of Horse Ranch Creek Road has been designed to travel between the two significant buried loci of SDI-682, thus avoiding them (Confidential Figure 3). However, as observed in the Hector et al. 2008 report, the land topography does approximate what was probably the original land surface and, combined with the alluvial depositional character of the orchard area, it is possible that subsurface buried deposits related to the Monserate adobe could be present.

Conclusions

In summary, cultural resources were recorded in proximity to one of the Passerelle off-site improvement areas. Archaeological investigations have confirmed the presence of buried deposits related to CA-SDI-682 and the possibility of buried remains of the Rancho Monserate adobe in proximity to the proposed improvements at Horse Ranch Creek Road and realigned Pala Road (SR-76). Therefore, the Meadowood archaeological consultant, ASM Affiliates, Inc., recommended grading monitoring for any improvements in the area of the intersection of existing Pala Road (SR-76) and Horse Ranch Creek Road (Hector et al. 2008). The terms of the required grading-monitoring are outlined in "Historic Properties Treatment Plan for Meadowood Project, San Diego County, California prepared for Pardee Homes by ASM Affiliates, Inc. (Cook 2006).

The California Environmental Quality Act (CEQA), Sections 21083.2 of the statues and 15064 of the Guidelines, and the County's Resource Protection Ordinance and the County's Guidelines for Determining Significance and Report Format and Content Requirements, Cultural Resources: Archaeological and Historical Resources, require identification of potentially significant cultural resources, evaluation according to CEQA and County significance criteria, and preservation or mitigation in the form of data recovery. In response to County-consultation pursuant to Government Code 65352.3 (Senate Bill 18), the San Luis Rey Band of Luiseño Indians has requested that all ground-disturbing activities be monitored for cultural resources on the Passerelle property.

Therefore, during initial brushing, debris clearing, and grading for improvements at Horse Ranch Creek Road and Pala Road (SR76), an archaeologist and Luiseño Native American monitor should be present to ensure that if potentially significant deposits are uncovered, they are evaluated for significance and adequate preservation or data recovery tasks are implemented. The grading monitoring program language stipulated by the County Department of Planning and Land Use for the Passerelle property is included with this letter as Attachment 1.

Implementation of the monitoring program will ensure compliance with the California Environmental Quality Act (CEQA), Sections 21083.2 of the statues and 15064 of the Guidelines, the County's Resource Protection Ordinance, the County's Guidelines for Determining Significance and Report Format and Content Requirements, Cultural Resources: Archaeological and Historical Resources, and Government Code 65352.3 (Senate Bill 18), and will ensure that no significant impacts to prehistoric or historic resources on the property will occur as a result of the Passerelle off-site improvements.

I hope this letter provides you with the information needed to complete the cultural resources review for this project.

Sincerely,

Sue A. Wade
Archaeologist-Historian

cc: Mr. David Davis, Passerelle LLC
Ms. Lisa Capper, Helix Environmental

References Cited

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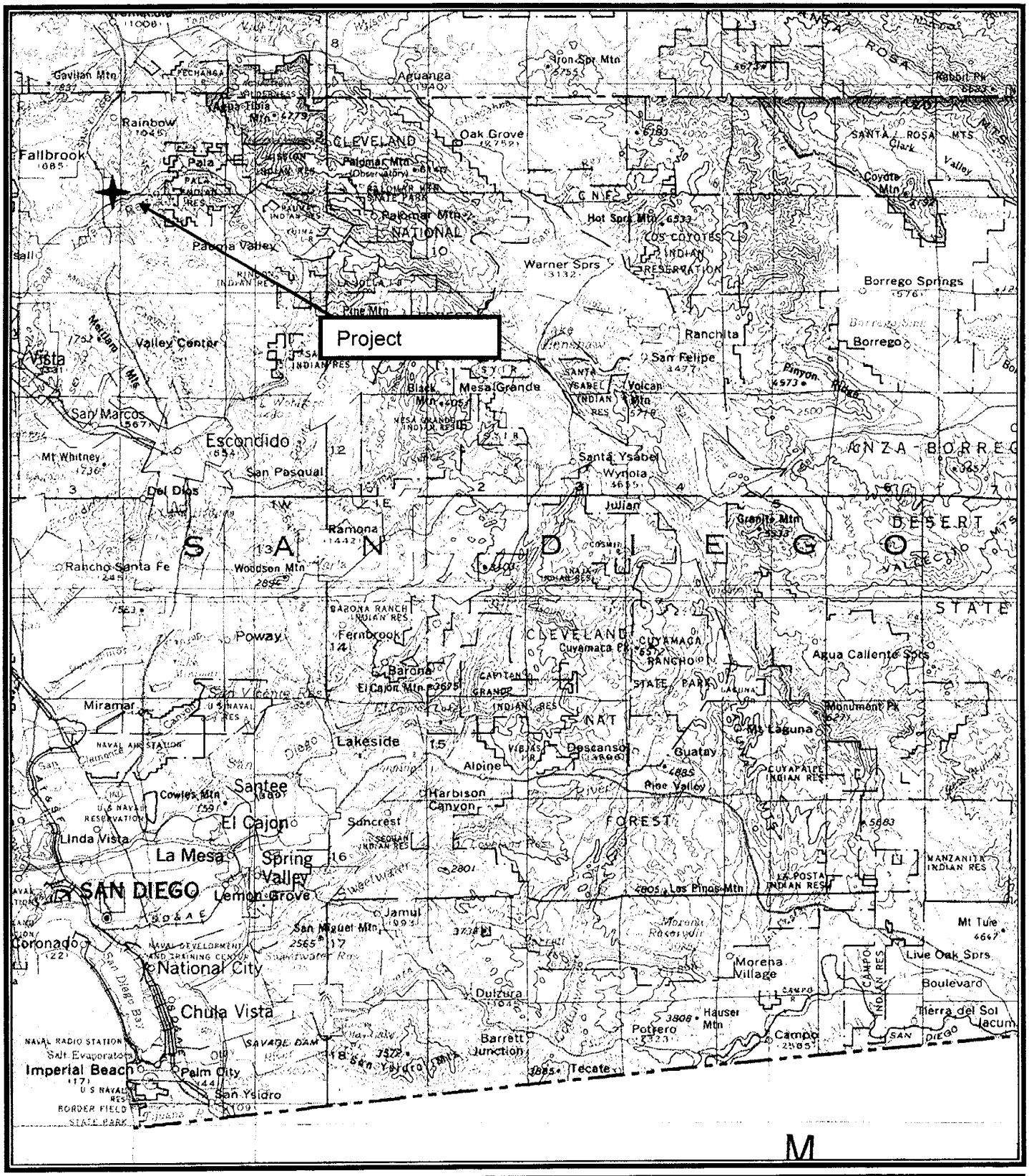

FIGURE 1: PROJECT LOCATION
SOUTHERN CALIFORNIA U.S.G.S. MAP

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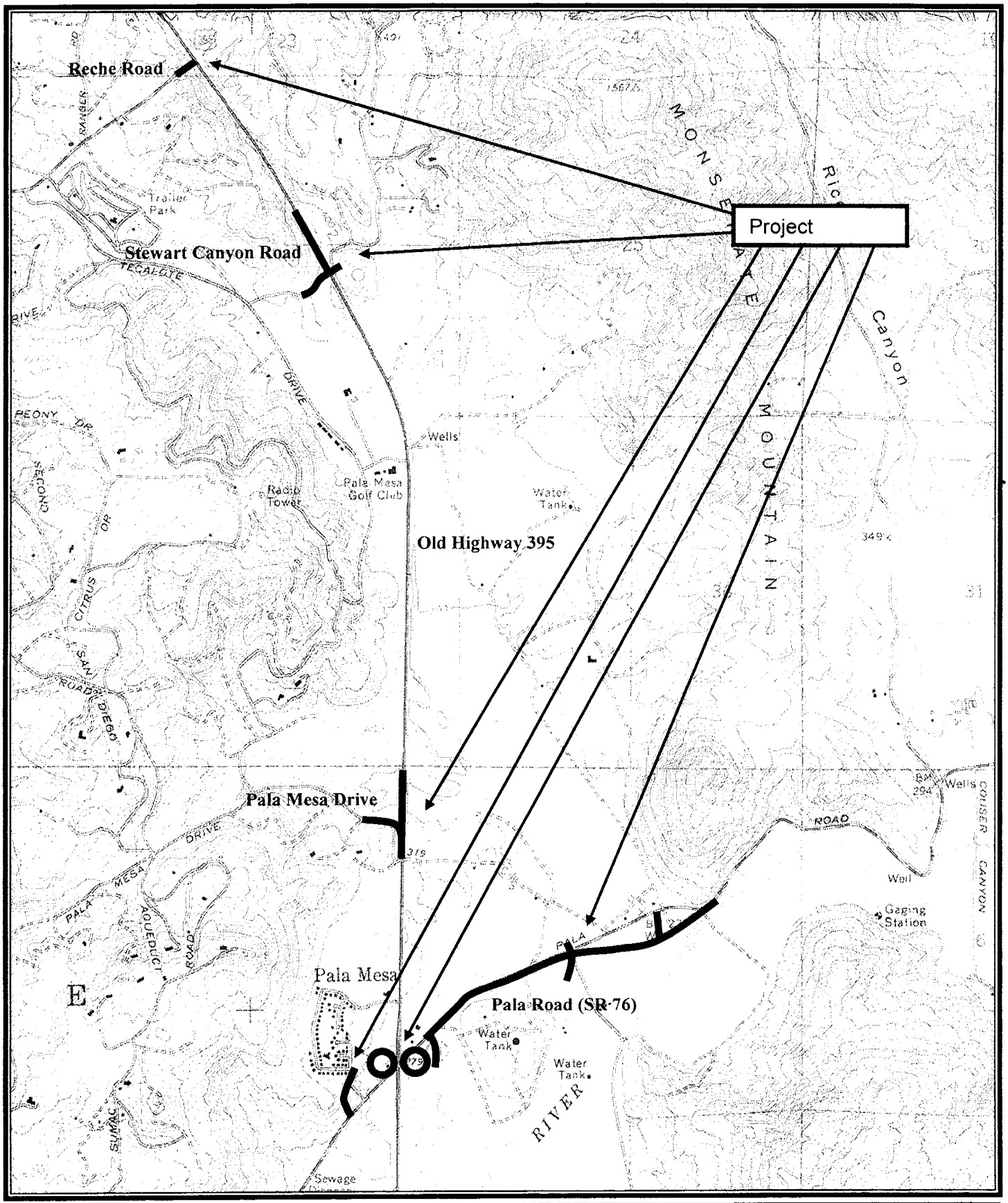

FIGURE 2: OFF-SITE IMPROVEMENT LOCATIONS
TEMECULA and BONSALL
U.S.G.S. 7.5-MINUTE MAPS

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Attachment 1
County of San Diego, Department of Planning and Land Use
Archaeological Grading Monitoring Plan Requirements

The grading monitoring plan shall consist of the following:

Prior to Approval of Grading or Improvement plans, the subdivider shall:

A. Implement a grading monitoring and data recovery program to mitigate potential impacts to undiscovered buried archaeological resources on the Campus Park/Passerelle Project (GPA03-004/REZ03-014/SPA03-008/TM5338/Log No. 03-02-059) Off-Site Improvement areas, to the satisfaction of the Planning Director. This program shall include, but shall not be limited to, the following actions:

1. Provide evidence to the Department of Planning and Land Use that a County certified archaeologist has been contracted to implement a grading monitoring and data recovery program to the satisfaction of the Director of Planning and Land Use (DPLU). A letter from the Project Archaeologist shall be submitted to the Director of Planning and Land Use. The contract shall include the following guidelines:

a. The consulting archaeologist shall ensure that a Luiseño Native American monitor will be involved with the grading monitoring program.

b. The County certified archaeologist/historian and Native American monitor shall attend the pre-grading meeting with the contractors to explain and coordinate the requirements of the monitoring program.

c. The consulting archaeologist shall monitor all areas identified for development.

d. An adequate number of monitors (archaeological/historical/Native American) shall be present to ensure that all earth-moving activities are observed and shall be on-site during all grading activities.

e. During the original cutting of previously undisturbed deposits, the archaeological monitor(s) and Luiseño Native American monitor(s) shall be onsite full-time to perform full-time monitoring as determined by the Principle Investigator of the excavations. The frequency of inspections will depend on the rate of excavation, the materials excavated, and the presence and abundance of artifacts and features. The frequency of inspections will be determined by the Principal Investigator in consultation with the Native American monitor.

f. Isolates and clearly non-significant deposits shall be minimally documented in the field and the monitored grading can proceed.

g. In the event that previously unidentified potentially significant cultural resources are discovered, the archaeologist shall have the authority to divert or temporarily halt ground disturbance operations in the area of discovery to allow evaluation of potentially significant cultural resources. The archaeologist shall contact the County Archaeologist at the time of discovery. The archaeologist, in consultation with County staff archaeologist and Luiseño Native American Monitor, shall determine the significance of the discovered resources. The County Archaeologist must concur with the evaluation before construction activities will be allowed to resume in the affected area. For significant cultural resources, a Research Design

and Data Recovery Program to mitigate impacts shall be prepared by the consulting archaeologist and approved by the County Archaeologist, then carried out using professional archaeological methods.

h. If any human bones are discovered, the Principle Investigator shall contact the County Coroner. In the event that the remains are determined to be of Native American origin, the County Coroner shall contact the Native American Heritage Commission. The Most Likely Descendant, as identified by the Native American Heritage Commission, shall be contacted in order to determine proper treatment and disposition of the remains. The Principal Investigator shall follow up with the County Coroner and the Native American Heritage Commission to ensure that these steps have been completed.

i. Before construction activities are allowed to resume in the affected area, the artifacts shall be recovered and features recorded using professional archaeological methods. The Principle Investigator shall determine the amount of material to be recovered for an adequate artifact sample for analysis.

j. In the event that previously unidentified cultural resources are discovered, all cultural material collected during the grading monitoring program shall be processed and curated according to current professional repository standards. The collections and associated records shall be transferred, including title, to an appropriate curation facility within San Diego County, to be accompanied by payment of the fees necessary for permanent curation. Evidence shall be in the form of a letter from the curation facility identifying that archaeological materials have been received and that all fees have been paid.

k. In the event that previously unidentified cultural resources are discovered, a report documenting the field and analysis results and interpreting the artifact and research data within the research context shall be completed and submitted to the satisfaction of the Director of Planning and Land Use prior to the issuance of any building permits. The report will include Department of Parks and Recreation Primary and Archaeological Site forms.

l. In the event that no cultural resources are discovered, a brief letter to that effect shall be sent to the Director of Planning and Land Use by the consulting archaeologist that the grading monitoring activities have been completed.

B. Provide Evidence to the Director of Planning and Land Use that the following notes have been placed on the Grading Plan:

1. The County certified archaeologist/historian and Luiseño Native American monitor shall attend the pre-construction meeting with the contractors to explain and coordinate the requirements of the monitoring program.

2. During the original cutting of previously undisturbed deposits, the archaeological monitor(s) and Native American monitor(s) shall be onsite full-time to perform full-time monitoring as determined by the Principle Investigator of the excavations. The frequency of inspections will depend on the rate of excavation, the materials excavated, and the presence and abundance of artifacts and features. The frequency of inspections will be determined by the Principal Investigator in consultation with the Native American monitor.

3. In the event that previously unidentified potentially significant cultural resources are discovered, the archaeological monitor(s) shall have the authority to divert or temporarily halt

ground disturbance operation in the area of discovery to allow evaluation of potentially significant cultural resources. The Principle Investigator shall contact the County Archaeologist at the time of discovery. The Principle Investigator, in consultation with County staff archaeologist and Luiseno Native American monitor, shall determine the significance of the discovered resources. The County Archaeologist must concur with the evaluation before construction activities will be allowed to resume in the affected area. For significant cultural resources, a Research Design and Data Recovery Program to mitigate impacts shall be prepared by the consulting archaeologist and approved by the County Archaeologist, then carried out using professional archaeological methods.

4. The consulting archaeologist and Native American monitor shall monitor all areas identified for development.

5. If any human bones are discovered, the Principle Investigator shall contact the County Coroner. In the event that the remains are determined to be of Native American origin, the County Coroner shall contact the Native American Heritage Commission. The Most Likely Descendant, as identified by the Native American Heritage Commission, shall be contacted in order to determine proper treatment and disposition of the remains. The Principal Investigator shall follow up with the County Coroner and the Native American Heritage Commission to ensure that these steps have been completed.

6. Prior to rough grading inspection sign-off, provide evidence that the field grading monitoring activities have been completed to the satisfaction of the Director of Planning and Land Use. Evidence shall be in the form of a letter from the Project Archaeologist.

7. Prior to Final Grading Release, submit to the satisfaction of the Director of Planning and Land Use, a final report that documents the results, analysis, and conclusions of all phases of the Archaeological Monitoring Program. The report shall also include the following:

a. Department of Parks and Recreation Primary and Archaeological Site forms.

b. Evidence from a curation facility within San Diego County that all cultural material collected during the grading monitoring program has been received for curation accompanied by payment of the fees necessary for permanent curation.

In the event that no cultural resources are discovered, a brief letter to that effect shall be sent to the Director of Planning and Land Use by the consulting archaeologist that the grading monitoring activities have been completed.

C. Prior to recordation of the Final Map, the applicant shall:

1. Complete and submit a final report that documents the results, analysis, and conclusions of all phases of the Archaeological Monitoring Program to the satisfaction of the Director of Planning and Land Use. The report shall also include the following:

a. Department of Parks and Recreation Primary and Archaeological Site forms.

b. Evidence from a curation facility within San Diego County that all cultural material collected during the grading monitoring program has been received for curation accompanied by payment of the fees necessary for permanent curation.

In the event that no cultural resources are discovered, a brief letter to that effect shall be sent to the Director of Planning and Land Use by the consulting archaeologist that the grading monitoring activities have been completed.

CAMPUS PARK PROJECT

APPENDIX I

UTILITIES AND SERVICE SYSTEMS/PUBLIC SERVICES

SPA 03-008, GPA 03-004, R03-014, VTM 5338 RPL6,
S 07-030, S 07-031, LOG No. 03-02-059, SCH No. 2005011092

for the

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

SEPTEMBER 2009

WATER SYSTEM ANALYSIS

WATER SYSTEM ANALYSIS
FOR THE
CAMPUS PARK PROJECT
IN THE COUNTY OF SAN DIEGO

March 25, 2009

Dexter Wilson Engineering, Inc.
Consulting Engineers
2234 Faraday Avenue
Carlsbad, CA 92008
(760) 438-4422

Job No: 669-009

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CHAPTER 1

INTRODUCTION

This report provides an overview of water service for the Campus Park project in the County of San Diego. This report will develop water demands for the project, recommend required onsite facilities to accommodate the projected demands, and present offsite facility improvements needed to accommodate the project's water demands. This report recommends water facilities specific to the needs of the Campus Park project.

PROJECT LOCATION

The Campus Park project site is located in the unincorporated portion of San Diego County (County) in the community of Fallbrook, approximately 6 miles southeast of downtown Fallbrook and 46 miles north of downtown San Diego. State Route (SR) 76 borders the southern Project boundary of the site and Interstate 15 (I-15) borders the property along the northern and central western edge. The I-15/SR 76 interchange, a gas station, a "take-out" restaurant, and a California Department of Transportation Park and Ride facility are located southwest of the Project site. Development to the west of I-15 includes the Pala Mesa Resort, residential developments, and single-family homes. Uses to the north include single-family residences, nursery facilities and open space. The Meadowood Specific Plan Area (currently containing cultivated citrus and an avocado grove) is located to the east. Other uses to the east include undeveloped land and residences, with scattered avocado groves. A small rocky hill, Rosemary's Mountain, lies east of the southern portion of the Campus Park project site. Lancaster Mountain, an undeveloped lot, the San Luis Rey River, and a housing development are located south of the Project site. Figure 1-1 presents a vicinity map showing the subject property.

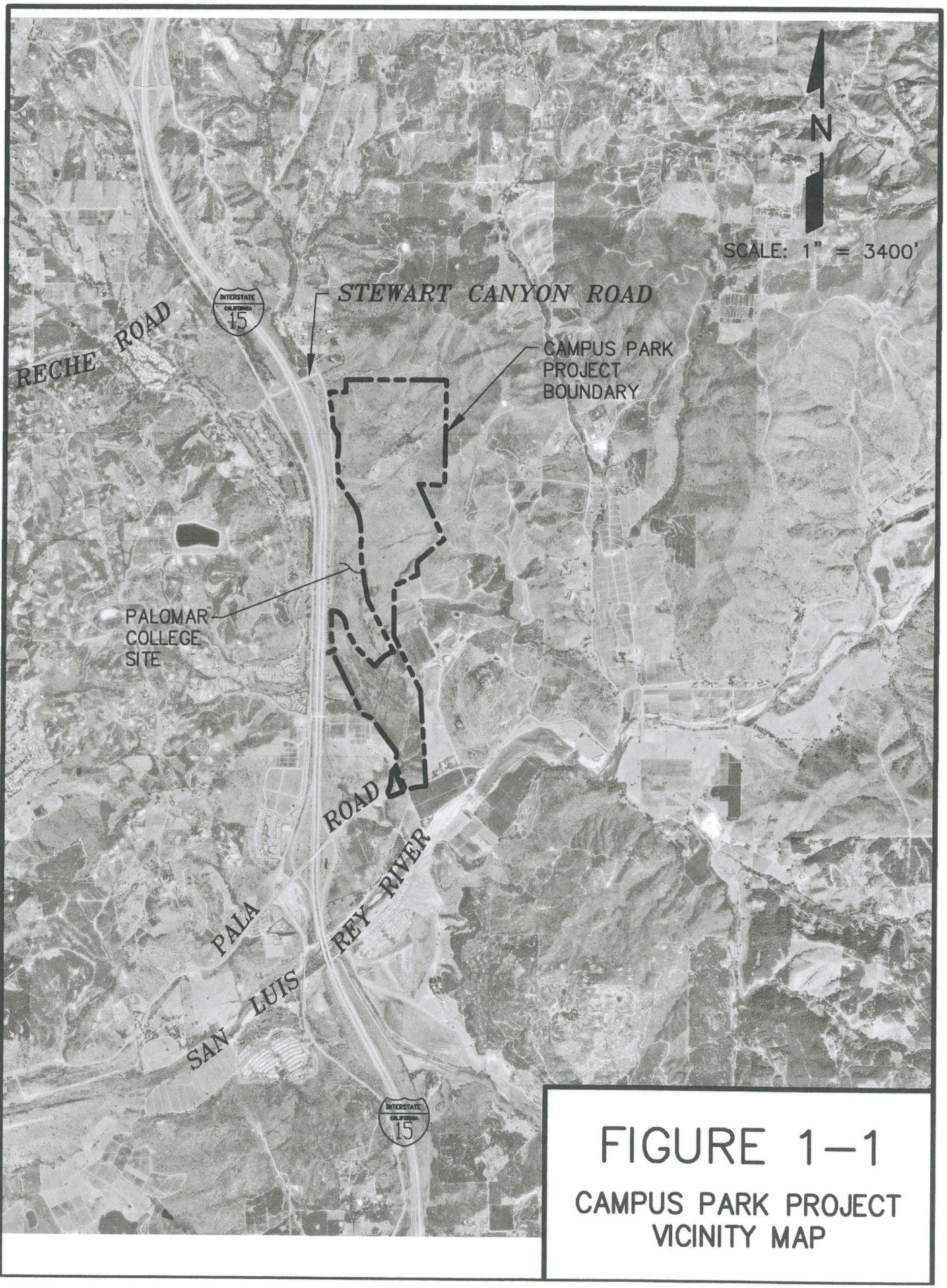


FIGURE 1–1

CAMPUS PARK PROJECT VICINITY MAP

The Campus Park project site is about 3,000 feet across (east-west), at its widest point and approximately 11,000 feet (two miles) from the northern to southern boundary. The site is divided by Pala Mesa Heights Drive, an east/west-trending unpaved road. The northern approximately 176-acre portion of the site has a generally square shape and is currently accessed by the north extension of Pankey Road via Stewart Canyon Road, which travels under I-15 and connects to Old Highway 395 on the west side of I-15. The southern 240-acre segment of the site is an irregularly shaped area that is currently accessed by the south extension of Pankey Road via SR 76.

PROJECT DESCRIPTION

The Campus Park project proposes on-site construction of a mixed-use community. The development would include a total of 1,076 single- and multi-family homes, professional office uses, as well as parks, a Homeowner's Association (HOA) recreational facility, a Town Center (with retail and support services), and designated open space and biological open space preserves. Table 1-1 presents the proposed development summary for the Campus Park project.

TABLE 1-1
CAMPUS PARK PROPOSED
DEVELOPMENT PLAN

Land Use	Quantity
Residential Development	
Single Family Residential	521 dwelling units
Multi-Family Residential	555 dwelling units
Commercial Development	
Town Center Commercial	8.1 gross acres
Professional Office	157,000 square feet
Parks and Open Space	
Developed Parks	3.1 gross acres
Sports Complex	8.5 gross acres

The Campus Park project would include 521 single-family dwelling units and 555 multi-family dwelling units. Single-family residential units would be located in the northern portion of the site, and multi-family housing would be located in the central southern areas, on either side of Horse Ranch Creek Road, as well as abutting SR 76. Professional office buildings, an active sports complex, and a Town Center would be aligned (north to south) along the western edge of the northern portion of the Project site, bordered on the west by Horse Ranch Creek Road. Preserved coastal sage scrub habitat would abut most of the northern portion of the Proposed Project to the west, north, and east. The southern portion of the Project would include mostly preserved riparian habitat.

The Town Center would be constructed in the central portion of the Campus Park project site on the east side of Horse Ranch Creek Road. A total building square footage of 61,200 would be allowed in the planning area. The Town Center would include numerous structures, as well as a parking area. Community-serving uses in Campus Park would be concentrated in the Town Center core area, which would function as the social, commercial and activity center for the community. The Town Center would include a variety of social, civic and commercial uses within the Campus Park project, such as community-serving commercial retail shops and restaurants. Structures would not exceed two stories.

Four office professional lots are proposed for the development and would be located on the east side on Horse Ranch Creek Road on either side of Baltimore Oriole Road. In addition to administrative and professional services, office uses could include financial and real estate services, medical offices, schools, civic uses, day care and eating establishments. A total building square footage of approximately 157,000 would be allowed on these lots. Office professional uses would not exceed two stories.

A trail staging area is proposed immediately west of Pala Mesa Drive, north of SR 76. This staging area would provide parking for recreational users intending to utilize the region's existing and/or future trail network. It would include an asphalt parking area and landscaping.

PROJECT PHASING

Campus Park would be developed over an approximate five- to six-year period to ensure a logical and orderly expansion of roadways, public utilities, and infrastructure. Market conditions, funding for public facilities, and similar conditions beyond the control of the developer may extend implementation of the entire plan beyond that period.

TOPOGRAPHY

The existing topography on the property ranges in elevation from a low of approximately 270 feet to a high of approximately 850 feet. The topography generally increases from south to north and from west to east. Natural drainage from the property flows south under Highway 76 and discharges into the San Luis Rey River on the east side of the Interstate 15 Freeway. The higher elevations of the property which are located at the north and eastern ends of the project are not planned to be developed because of the steepness of the existing terrain.

WATER SERVICE

Water service for the Campus Park project will be provided by the Rainbow Municipal Water District. The Rainbow Municipal Water District has existing water facilities in the vicinity of the Campus Park project; these facilities have sufficient capacity to serve the project. In addition, Section 7.1 of the Water Master Plan Update Final Report, May 2006, paragraph six states that "…supply capacity of the existing CWA and MWD aqueduct connections is projected to be adequate for ultimate demands." This report will provide information on the proposed onsite and offsite water facilities that are needed to provide adequate water service to the proposed project.

CHAPTER 2

DESIGN CRITERIA

This chapter presents the design criteria used in master planning water facilities for the Campus Park project. Unless otherwise noted, the criteria utilized in this report are established in accordance with the standards of the Rainbow Municipal Water District Domestic Water and Sanitary Sewer Construction Standards Manual, August 2006 Edition. The design criteria are used for analysis of the existing water system as well as for design and sizing of proposed improvements and expansions to the system to accommodate the projected water demands for the proposed development project.

Water Demands

The water demand factors used to project average water use for the Campus Park project are based on equivalent dwelling units and are summarized in Table 2-1.

TABLE 2-1
WATER USE FACTORS

Land Use	Average Daily Demand
Single Family Residential	500 gpd/DU
Multi-Family Residential	400 gpd/DU
Town Center Commercial	3,000 gpd/acre
Professional Office	100 gpd/1,000 SF
Developed Parks	4,000 gpd/acre

Peaking Factors

To convert average daily water demand to maximum day demands, a peaking factor of 2.0 is used. The peaking factor for average day demand to maximum (peak) hour demand is 4.5 (Section 2.02.A of the Rainbow Municipal Water District Domestic Water and Sanitary Sewer Construction Standards Manual, August 2006 Edition).

Fire Flows

The fire flow requirements vary by the type of development which occurs. Residential development requires a fire flow of 1,500 gpm at 20 psi residual. For commercial development, fire flows become dependent upon the size of the buildings and the type of construction that is used. Generally, for planning purposes, a fire flow requirement of 4,000 gpm is appropriate for commercial land uses. Since the commercial fire flow requirement is greater than the peak hour demand, the fire flow requirement will govern the water system sizing. A pressure residual of 20 psi at the fire flow location is standard for these land uses as well.

System Pressures

Generally, the potable water distribution system is designed to maintain static pressures between 60 psi and 200 psi. The potable water distribution system has been designed to yield a minimum of 40 psi residual pressure at any location under peak hour demand flows, and a minimum residual pressure of 20 psi during maximum day demand plus fire flow conditions. Potable water mains are sized to maintain a maximum velocity of 10 feet per second under a maximum day plus fire flow scenario and a maximum velocity of 5 feet per second under peak hour flow conditions.

CHAPTER 3

PROJECTED WATER DEMANDS

Based on the water use factors presented in Chapter 2 and the proposed development plan for the Campus Park project, Table 3-1 provides the projected water use for the project. The total projected average water demand is 0.56 mgd.

TABLE 3-1
CAMPUS PARK PROJECT
WATER DEMAND PROJECTIONS

Land Use	Quantity	Demand Factor	Average Water Use, gpd
Single Family Residential	521 units	500 gpd/DU	260,500
Multi-Family Residential	555 units	400 gpd/DU	222,000
Town Center Commercial	8.1 acres	3,000 gpd/acre	24,300
Professional Office	157,000 SF	100 gpd/1,000 SF	15,700
Developed Parks	3.1 acres	4,000 gpd/acre	12,400
Sports Complex	8.5 acres	4,000 gpd/acre	34,000
TOTAL			**568,900 = 395 gpm = 1,137.8 EDUs**

The total water demand for the Campus Park project is equivalent to 1,137.8 EDUs of water demand based on one EDU equaling one single family residence (500 gpd).

Using the peaking factors discussed in Chapter 2 of this report, the maximum day demand (peaking factor is 2.0) for the Campus Park project is 1,137,800 gpd, or 790 gpm. The peak hour peaking factor is 4.5. This results in a peak hour demand for the Campus Park project of 2,560,050 gpd, or 1,778 gpm.

CHAPTER 4

EXISTING WATER FACILITIES

This chapter describes the existing water system facilities in the vicinity of the Campus Park project. Existing water facilities are located offsite from the project and will need to be extended to and within the Campus Park project. These facilities will be discussed in more detail.

Existing Pressure Zones

There are two existing water service pressure zones in the vicinity of the Campus Park project. These two zones are recommended to be extended to the project to provide water service and fire protection to the proposed development.

Canonita Zone. To the north of the Campus Park project there are existing water facilities which are within the Canonita Zone System. This pressure zone operates at an hydraulic grade line of 1019 feet. The nearest facility to the Campus Park project is a 16-inch water main in Stewart Canyon Road. From the Interstate 15 Freeway crossing, this water main extends north and connects to the 6.0 million gallon Canonita Tank.

Beck Zone. To the west and southwest of the Campus Park project there are existing water lines which are within the Beck Zone System. This pressure zone operates at an hydraulic grade line of 897 feet. The nearest water line to the Campus Park project is an 18-inch water main located in the Pala Mesa Drive overcrossing of the Interstate 15 Freeway. The Beck Zone System includes a storage reservoir which has 203.7 million gallons of storage capacity; it is called Beck Reservoir.

CHAPTER 5

EVALUATION OF EXISTING FACILITIES AND RECOMMENDED WATER FACILITIES

The purpose of this chapter is to summarize the analyses that we have performed to determine the required onsite improvements for the Campus Park project. This chapter will also discuss the offsite improvements needed to supply adequate water service and fire protection to the proposed development.

PROPOSED WATER SERVICE ZONES

As discussed in the previous chapter, the water service pressure zones in the near vicinity of the Campus Park project are the Canonita 1019 Zone and the Beck 897 Zone. Based upon the proposed range of pad elevations on the project of 270 feet to 511 feet, both of the available existing pressure zones have too great an hydraulic grade line to provide service pressures in an acceptable range.

We are recommending that the Campus Park project be served by a new water service pressure zone. The new zone is recommended to be set at an hydraulic grade line of 660 feet. This will result in the water service pressures to be a minimum of 64 psi at the high end of the service area, and maximum service pressure to be 169 psi at the lower ends of the proposed development. Only a small segment of the proposed project is located at elevations where the static pressure will be above 150 psi.

The recommended new water pressure zone for the Campus Park project is intended to be connected to existing water lines in the vicinity of the proposed project. The new pressure zone will be created using pressure reducing stations which will be constructed as part of the Campus Park project water system improvements. These onsite improvements will be discussed later in this report.

OFFSITE WATER SYSTEM

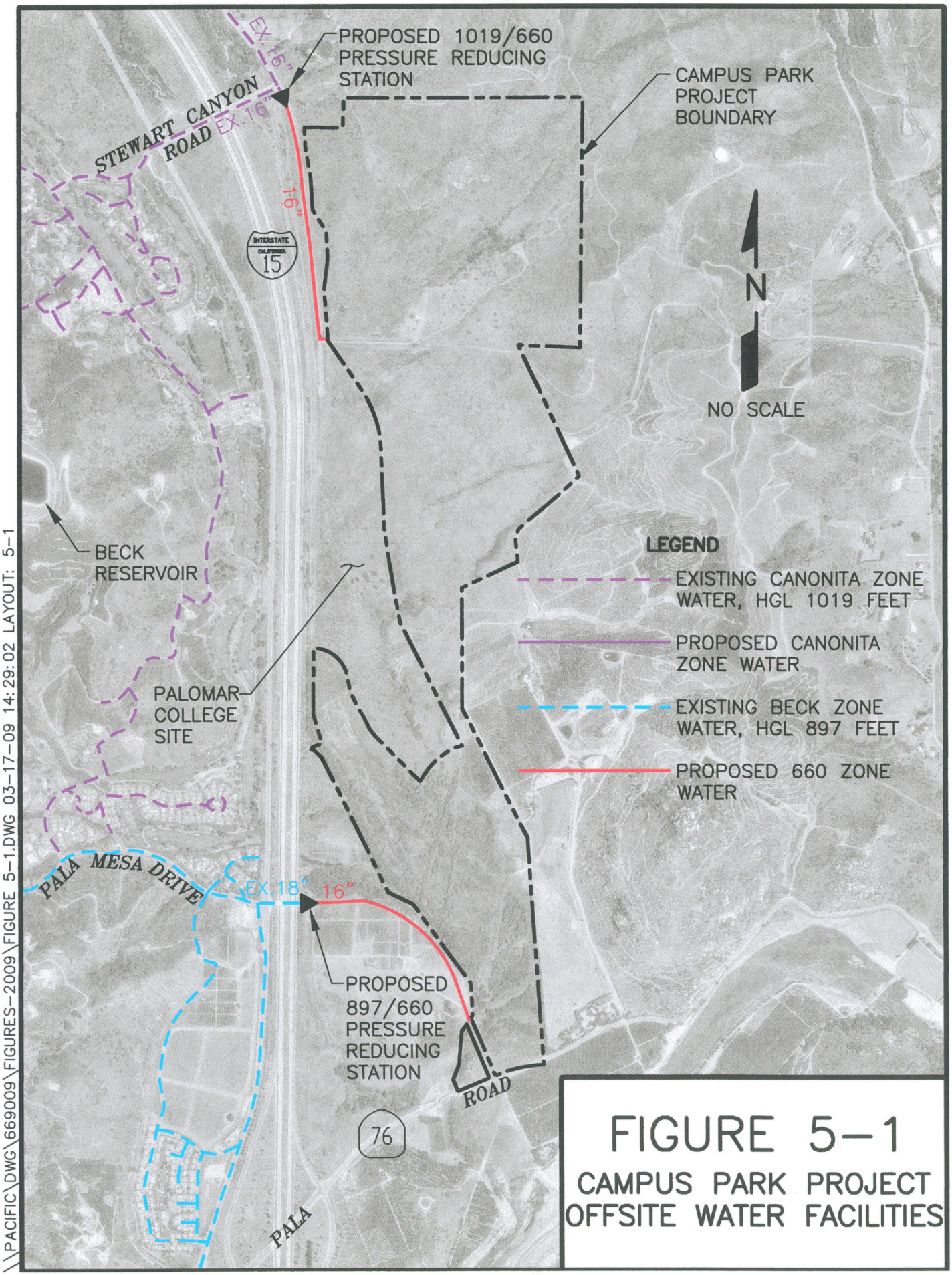
The offsite requirements for the Campus Park project water system are recommended to be extensions of the existing water mains to the subdivision boundary. Figure 5-1 shows the two offsite water extensions proposed for the Campus Park project.

At the southwestern end of the Campus Park project, an offsite water line extension would include extending the existing 897 Zone 18-inch water line which currently ends at the Pala Mesa Drive overcrossing at the Interstate 15 Freeway. The water main extension is recommended to be a 16-inch water line. This water system connection will be the primary feed to the proposed 660 Zone pressure system which will provide service to the entire Campus Park development project.

The alignment of the water main extension is proposed to follow the extension of Pala Mesa Drive from the Interstate 15 Freeway east and south to future Pankey Place. Within Pankey Place, the new water line will extend to future Horse Ranch Creek Road, the backbone street for the Campus Park project. Since the existing 897 Zone has too high an hydraulic grade line for service in the Campus Park project, a proposed pressure reducing station is recommended to be located just east of the connection to the existing 18-inch water main. This is shown schematically on Exhibit A, Sheet 2 of 2, at the back of this report.

A secondary or redundant water system connection to the Campus Park development is proposed from the Canonita 1019 Zone system. The existing 1019 Zone 16-inch water main in Stewart Canyon Road to the north of the Campus Park project is recommended to be extended south in future Horse Ranch Creek Road. This water main extension will provide redundant service to the proposed 660 Zone water system within the Campus Park project.

The recommendation is to construct a pressure reducing station at Stewart Canyon Road off of the existing 1019 Zone water line and extend a 660 Zone water line south to the Campus Park project. The offsite extension of the 660 Zone water line in future Horse Ranch Creek Road is recommended to be a 16-inch main as shown in Figure 5-1.



\\PACIFIC\DWG\669009\FIGURES-2009\FIGURE 5-1.DWG 03-17-09 14:29:02 LAYOUT: 5-1

FIGURE 5-1

CAMPUS PARK PROJECT OFFSITE WATER FACILITIES

ONSITE WATER SYSTEM

The onsite water system for the Campus Park project will consist of distribution piping in a new 660 Pressure Zone. Service pressures will range between 64 psi and 169 psi. The primary point of connection for the proposed 660 Pressure Zone will be to the existing 18-inch 897 Zone water line in the Pala Mesa Drive Interstate 15 Freeway overcrossing. This water connection will include a pressure reducing station to reduce system pressure from the 897 Zone to the proposed 660 Zone. Thus, the main supply of water to the Campus Park project will be from the Beck Zone System.

For the purpose of redundancy, the 660 Pressure Zone at the north end of the Campus Park project will be connected to the existing 1019 Zone 16-inch water main in Stewart Canyon Road by means of a pressure reducing station. A 16-inch 660 Zone water main will be constructed in future Horse Ranch Creek Road.

Exhibit A at the back of this report presents the recommended water system configuration and preliminary pipe sizes for the Campus Park project. This exhibit is also color coded to enable the reader to distinguish between the proposed 660 Pressure Zone system within the Campus Park development and the higher pressure systems which are providing the primary connections to the project.

The majority of the new water line sizes are 8-inch diameter. A 16-inch diameter water line is proposed for Horse Ranch Creek Road through the central portion of the proposed project in order to deliver the required fire flows to the Town Center Commercial land uses, the Sports Complex, and Professional Office land uses proposed for this project.

On the south end of the Campus Park project, a 12" water main is proposed to be stubbed south of Pankey Place in Horse Ranch Creek Road. Similarly, a 12" water main is proposed to be stubbed south of Pankey Place in Pankey Road to provide service to the southernmost end of the Campus Park project (see Exhibit A, Sheet 2 of 2). A 12" water main is adequate to deliver fire flow capacity to the multi-family residential land use at the south end of the Campus Park development.

PRESSURE REDUCING STATIONS

For water service to the Campus Park project, the recommended water system includes two pressure reducing stations. These two pressure reducing stations will provide the recommended 660 Pressure Zone water service to the development project. A description of the two pressure reducing stations follows.

1. The Pala Mesa Drive Pressure Reducing Station. This proposed pressure reducing station will provide the primary feed to the Campus Park development project. It will connect to the existing 897 Zone water main in Pala Mesa Drive and reduce the pressure to the 660 Pressure Zone system within the proposed development.

   It is anticipated that this pressure reducing station will be installed on a concrete slab above grade and include two pressure reducing valves: a 10" diameter main valve capable of delivering up to 4,900 gpm continuous flow to meet the required fire flow capacity; and a 4" valve having a flow range between 50 and 800 gpm to supply the domestic demands of the project.

2. The Horse Ranch Creek Road Pressure Reducing Station. This regulating station is proposed to be located near the north end of the project where future Horse Ranch Creek Road intersects with existing Stewart Canyon Road. It will reduce the water from the existing 1019 Zone to the proposed 660 Pressure Zone system. The function of this pressure reducing station will be to provide backup water delivery to the Campus Park development in the event of a large onsite demand such as a fire flow event. This pressure reducing station will also provide backup water service to the project in the event that the Pala Mesa Drive Pressure Reducing Station is out of service.

   Similar to the Pala Mesa Drive Pressure Reducing Station, it is anticipated that the Horse Ranch Creek Road Pressure Reducing Station will be installed on a concrete slab above grade. It is proposed to include a 10" diameter pressure reducing valve capable of delivering up to 4,900 gpm continuous flow, and a 4" bypass valve having a flow range between 50 and 800 gpm.

WATER SYSTEM STORAGE

The Rainbow Municipal Water District Water Master Plan Update, May 2006, identifies an ultimate surplus of reservoir storage in the Beck 897 Zone (Section 6.6, Table 6-4 of the Water Master Plan Update, May 2006). The Beck Zone is being used as the primary water supply for the Campus Park project.

Since the Canonita 1019 Zone system is being used only as a redundant system, there is no expectation of daily water use from the Canonita 1019 Zone system. Therefore, the Campus Park development will not create additional storage demand on the Canonita 1019 Zone system.

CAMPUS PARK
PROJECT BOUNDARY

N

SCALE: 1" = 400'

MACTHLINE
SEE SHEET 2

MULTI-FAMILY
RESIDENTIAL

TOWN
CENTER

TOWN
CENTER

SPORTS
COMPLEX

PROFESSIONAL
OFFICE

PROF.
OFFICE

HORSE RANCH CREEK ROAD

PALOMAR COLLEGE SITE

INTERSTATE 15 FREEWAY

12"

16"

1019/660 PRESSURE
REDUCING STATION

LEGEND

1019 PRESSURE ZONE

660 PRESSURE ZONE

PRESSURE REDUCING STATION

NOTE: ALL WATER SIZES 8" UNLESS NOTED OTHERWISE

EXHIBIT A

CAMPUS PARK PROJECT PROPOSED ONSITE WATER SYSTEM

SHEET 1 of 2

\\PACIFIC\DWG\669009\FIGURES-2009\08-WATER_EXHIBIT-A-1.DWG 03-17-09 14:34:58 LAYOUT: EXHIBIT

MACTHLINE
SEE SHEET 1

N

SCALE: 1" = 400'

PALA ROAD (HWY 76)

HORSE RANCH CREEK ROAD

PANKEY PLACE

PANKEY ROAD

MULTI-FAMILY RESIDENTIAL

MULTI-FAMILY RESIDENTIAL

MULTI-FAMILY RESIDENTIAL

OPEN SPACE

CAMPUS PARK PROJECT BOUNDARY

PALOMAR COLLEGE SITE

OPEN SPACE

16"

12"

INTERSTATE 15 FREEWAY

PALA MESA DR. (EXTENSION)

897/660 PRESSURE REDUCING STATION

EX. 18"

LEGEND

660 PRESSURE ZONE

897 PRESSURE ZONE

PRESSURE REDUCING STATION

EXHIBIT A

CAMPUS PARK PROJECT PROPOSED ONSITE WATER SYSTEM

SHEET 2 of 2

\\PACIFIC\DWG\669009\FIGURES-2009\08-WATER_EXHIBIT-A-2.DWG 02-20-09 15:31:30 LAYOUT: EXHIBIT

SEWER SERVICE ANALYSIS

SEWER SERVICE ANALYSIS
FOR THE
CAMPUS PARK PROJECT
IN THE COUNTY OF SAN DIEGO

March 24, 2009

Dexter Wilson Engineering, Inc.
Consulting Engineers
2234 Faraday Avenue
Carlsbad, CA 92008
(760) 438-4422

Job No: 669-009

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CHAPTER 1

INTRODUCTION

This report provides an overview of sewer service for the Campus Park project in the County of San Diego. This report will develop sewage flows from the project, recommend required onsite facilities to accommodate project flows, and present offsite facility improvements needed to accommodate Campus Park sewage flows. This report recommends sewerage facilities specific to the needs of the Campus Park project.

PROJECT LOCATION

The Campus Park project site is located in the unincorporated portion of San Diego County (County) in the community of Fallbrook, approximately 6 miles southeast of downtown Fallbrook and 46 miles north of downtown San Diego. State Route (SR) 76 borders the southern Project boundary of the site and Interstate 15 (I-15) borders the property along the northern and central western edge. The I-15/SR 76 interchange, a gas station, a "take-out" restaurant, and a California Department of Transportation Park and Ride facility are located southwest of the Project site. Development to the west of I-15 includes the Pala Mesa Resort, residential developments, and single-family homes. Uses to the north include single-family residences, nursery facilities and open space. The Meadowood Specific Plan Area (currently containing cultivated citrus and an avocado grove) is located to the east. Other uses to the east include undeveloped land and residences, with scattered avocado groves. A small rocky hill, Rosemary's Mountain, lies east of the southern portion of the Campus Park project site. Lancaster Mountain, an undeveloped lot, the San Luis Rey River, and a housing development are located south of the Project site. Figure 1-1 presents a vicinity map showing the subject property.

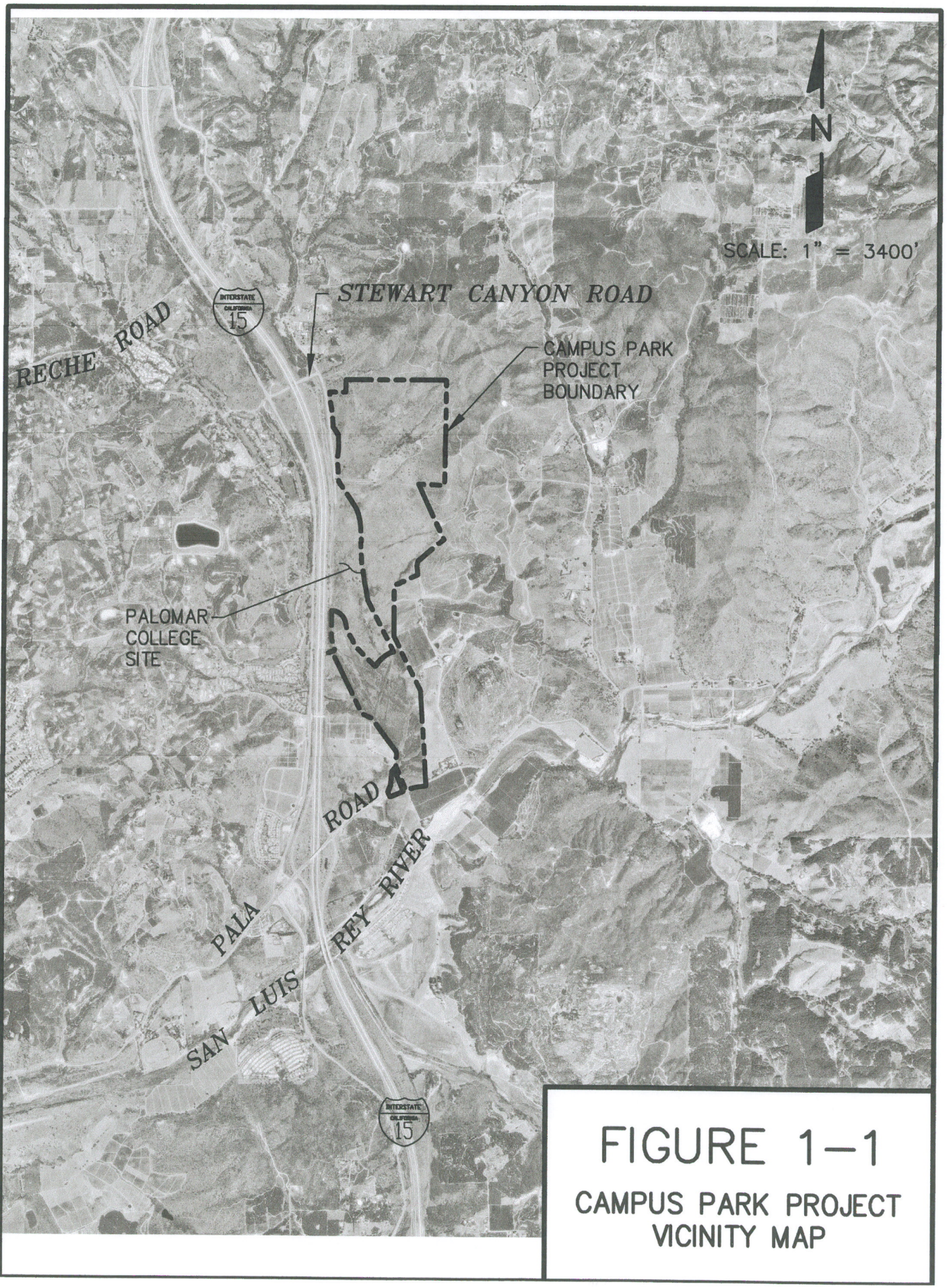

FIGURE 1–1

CAMPUS PARK PROJECT VICINITY MAP

The Campus Park project site is about 3,000 feet across (east-west), at its widest point and approximately 11,000 feet (two miles) from the northern to southern boundary. The site is divided by Pala Mesa Heights Drive, an east/west-trending unpaved road. The northern approximately 176-acre portion of the site has a generally square shape and is currently accessed by the north extension of Pankey Road via Stewart Canyon Road, which travels under I-15 and connects to Old Highway 395 on the west side of I-15. The southern 240-acre segment of the site is an irregularly shaped area that is currently accessed by the south extension of Pankey Road via SR 76.

PROJECT DESCRIPTION

The Campus Park project proposes on-site construction of a mixed-use community. The development would include a total of 1,076 single- and multi-family homes, professional office uses, as well as parks, a Homeowner's Association (HOA) recreational facility, a Town Center (with retail and support services), and designated open space and biological open space preserves. Table 1-1 presents the proposed development summary for the Campus Park project.

TABLE 1-1
CAMPUS PARK PROPOSED
DEVELOPMENT PLAN

Land Use	Quantity
Residential Development	
Single Family Residential	521 dwelling units
Multi-Family Residential	555 dwelling units
Commercial Development	
Town Center Commercial	61,200 square feet
Professional Office	157,000 square feet
Parks and Open Space	
Developed Parks	7 parks
Sports Complex	8.5 acres

The Campus Park project would include 521 single-family dwelling units and 555 multi-family dwelling units. Single-family residential units would be located in the northern portion of the site, and multi-family housing would be located in the central southern areas, on either side of Horse Ranch Creek Road, as well as abutting SR 76. Professional office buildings, an active sports complex, and a Town Center would be aligned (north to south) along the western edge of the northern portion of the Project site, bordered on the west by Horse Ranch Creek Road. Preserved coastal sage scrub habitat would abut most of the northern portion of the Proposed Project to the west, north, and east. The southern portion of the Project would include mostly preserved riparian habitat.

The Town Center would be constructed in the central portion of the Campus Park project site on the east side of Horse Ranch Creek Road. A total building square footage of 61,200 would be allowed in the planning area. The Town Center would include numerous structures, as well as a parking area. Community-serving uses in Campus Park would be concentrated in the Town Center core area, which would function as the social, commercial and activity center for the community. The Town Center would include a variety of social, civic and commercial uses within the Campus Park project, such as community-serving commercial retail shops and restaurants. Structures would not exceed two stories.

Four office professional lots are proposed for the development and would be located on the east side on Horse Ranch Creek Road on either side of Baltimore Oriole Road. In addition to administrative and professional services, office uses could include financial and real estate services, medical offices, schools, civic uses, day care and eating establishments. A total building square footage of approximately 157,000 would be allowed on these lots. Office professional uses would not exceed two stories.

A trail staging area is proposed immediately west of Pala Mesa Drive, north of SR 76. This staging area would provide parking for recreational users intending to utilize the region's existing and/or future trail network. It would include an asphalt parking area and landscaping.

PROJECT PHASING

Campus Park would be developed over an approximate five- to six-year period to ensure a logical and orderly expansion of roadways, public utilities, and infrastructure. Market conditions, funding for public facilities, and similar conditions beyond the control of the developer may extend implementation of the entire plan beyond that period.

TOPOGRAPHY

The existing topography on the property ranges in elevation from a low of approximately 270 feet to a high of approximately 850 feet. The topography generally increases from south to north and from west to east. Natural drainage from the property flows south under Highway 76 and discharges into the San Luis Rey River on the east side of the Interstate 15 Freeway. The higher elevations of the property which are located at the north and eastern ends of the project are not planned to be developed because of the steepness of the existing terrain.

SEWER SERVICE

Sewer service for the Campus Park project will be provided in part by the Rainbow Municipal Water District. The Rainbow Municipal Water District has existing sewer facilities in the vicinity of the Campus Park project; these facilities have capacity to serve the portion of the project which has purchased sewer capacity rights for 850 EDUs in Rainbow Municipal Water District. The balance of the project, for which sewer capacity rights are not currently owned, may be able to purchase sewer capacity in the Rainbow Municipal Water District if sufficient capacity is available.

An alternative approach will be to serve the balance of the project in conjunction with the adjacent development project proposed by Pardee Development to the east of the Campus Park project. This report will provide information on the proposed onsite and offsite facilities that will provide sewer service to the Campus Park project and present the two sewer service options for that portion of the project for which sewer capacity has not been secured with the Rainbow Municipal Water District.

CHAPTER 2

DESIGN CRITERIA

This chapter presents the design criteria used in master planning sewer facilities for the Campus Park project. Unless otherwise noted, the criteria utilized in this report are established in accordance with the standards of the Rainbow Municipal Water District Domestic Water and Sanitary Sewer Construction Standards Manual, August 2006 Edition. The design criteria are used for analysis of the existing sewer system as well as for design and sizing of proposed improvements and expansions to the system to accommodate the projected flows from the proposed development project.

Sewage Flows

The sewage generation factors used to project average flows from the project are summarized in Table 2-1. These factors are in accordance with the Domestic Water and Sanitary Sewer Construction Standards Manual, August 2006, Section 2.03.A with one exception. The exception is that one EDU is equivalent to 250 gpd of sewage flow.

Peaking Factor

To convert average daily flow to peak flow, the peaking factor equation in the Domestic Water and Sanitary Sewer Construction Standards Manual shall be used because the population for the Campus Park project is expected to be less than 5,000 people. The peaking factor equation has the following form:

$$Qpeak / Qaverage = [18 + (P^{0.5})] / [4 + (P^{0.5})]$$

Population, P, is in thousands. Population is calculated as 2.5 persons per EDU.

TABLE 2-1 SEWAGE GENERATION FACTORS	
Land Use	**EDU FACTOR**
Single-Family Residential	1.0
Multi-Family Residential	1.0
Professional Office	3.4 for first 5,000 ft.^{2} 0.4/1,000 ft.^{2} for balance
Commercial	3.4 for first 5,000 ft.^{2} 0.4/1,000 ft.^{2} for balance
Developed Park	1.0
Sports Complex	5.0

Gravity Sewers

All gravity sewers have been designed to convey peak flow. For pipes with a diameter of 12 inches and smaller, the sewers have been designed to convey this flow when flowing half full. For pipes with a diameter of larger than 12 inches, the sewers have been designed to convey peak flow when flowing two-thirds full by depth. Manning's equation with n = 0.013 is used to size all gravity sewers. All new sewers were designed to maintain a minimum velocity of three feet per second at design capacity to prevent the deposition of solids.

CHAPTER 3

PROJECTED SEWAGE FLOWS

Based on the sewage generation factors presented in Chapter 2 and the proposed concept development plan for the Campus Park project, Table 3-1 provides the projected wastewater flows for the project. The total projected average sewage flow is 0.29 mgd.

TABLE 3-1
CAMPUS PARK PROJECT
SEWER FLOW PROJECTIONS

Land Use	Quantity	EDUs	Demand Factor	Average Sewage Flow, gpd
Single Family Residential	521 units	521	250 gpd/EDU	130,250
Multi-Family Residential	555 units	555	250 gpd/EDU	138,750
Town Center Commercial	61,200 SF	25.9	250 gpd/EDU	6,470
Professional Office	157,000 SF	64.2	250 gpd/EDU	16,050
Developed Parks	7 parks	7.0	250 gpd/EDU	1,750
Sports Complex	1	5.0	250 gpd/EDU	1,250
TOTAL		**1,178.1**		**294,520 = 205 gpm**

Peak sewage flow from the Campus Park project is based upon a population from 1,178.1 EDUs. At 2.5 persons per EDU, this equates to a population of 2,945.3 people. Then using the peak equation, the peak factor is 3.45. Thus the Campus Park project peak sewage flow is expected to be 1,016,094 gpd, or 706 gpm.

CHAPTER 4

EXISTING SEWER FACILITIES

This chapter describes the existing sewer facilities in the vicinity of the Campus Park project. The existing sewer facilities in the area of the Campus Park project consist of gravity sewer lines, a pump station, and a force main. These facilities will be discussed in more detail.

Gravity Sewers

The existing gravity sewers in the vicinity of the Campus Park project are located in the east central portion of the Rainbow Municipal Water District. These sewer lines are currently providing gravity sewer service to this part of the Rainbow Municipal Water District.

One of the two gravity sewer lines to be described is a 12" diameter gravity line and is called the Plant B Collector Sewer. This name is given to it because it collects sewage and routes it to the Plant B Pump Station. The Plant B Collector begins at Reche Road and extends south and east along Tecalote Drive. It crosses the Interstate 15 Freeway south of Tecalote Lane and north of where the creek crosses the freeway. Once on the east side of the freeway, the 12-inch collector sewer continues to follow along Horse Ranch Creek south to Pala Road (Highway 76). As it approaches the San Luis Rey River it begins to turn west, crosses under the freeway, and connects to the Plant B Pump Station which is located just south and west of the Rainbow Municipal Water District offices on Old Highway 395.

A portion of the alignment of this 12" collector sewer on the east side of the Interstate 15 Freeway abuts the Campus Park property. Because this section of gravity sewer line is along the southern portion of the property, it is feasible to connect the entire Campus Park project to this existing collector sewer by gravity. However, available capacity in the Plant B Collector will continue to diminish as additional projects upstream of Campus Park come on line. This will be further discussed later in this study.

A second gravity sewer line in the vicinity of the Campus Park project is the 21" and 24" gravity sewer line in Pala Road (Highway 76) beginning on the west side of the Interstate 15 Freeway. This section of gravity sewer main was built as part of the Hewlett-Packard Campus Park improvements in 1988; the 24" gravity sewer improvement continues west in Pala Road (Highway 76) to Gird Road. This gravity sewer line is currently being used as part of the Rainbow Municipal Water District's sewage conveyance system to deliver sewage to the City of Oceanside for treatment and disposal.

Sewer Lift Station and Force Mains

An existing sewer lift station is currently operating downstream of the Campus Park project. It is the Plant B Pump Station. This lift station is located near the Rainbow Municipal Water District offices which are located on Old Highway 395. All the gravity flows which are conveyed in the Plant B Collector Sewer flow to this lift station. The lift station currently has a firm design capacity of 320 gpm and the May 2006 Wastewater Master Plan Update identifies the existing peak dry weather flow to this station to be 242 gpm. The existing force main from this pump station is 6-inch diameter and extends north from the lift station and discharges into the 24" gravity sewer in Pala Road (Highway 76).

A force main also was constructed as part of the Hewlett-Packard Campus Park improvements mentioned above. This force main is a 10" and 12" diameter ductile iron pipe which extends through the Pala Road (Highway 76) bridge over the Interstate 15 Freeway. The 12" force main begins approximately 2,200 feet east of the east side of the Pala Road bridge over the Interstate 15 Freeway. Through the bridge over the freeway the force main is a 10" ductile iron pipe inside a 16" steel casing. The force main continues as a 10" pipe for approximately 200 feet on the west side of the bridge where it connects to the 21" gravity sewer line in Pala Road (Highway 76). Figure 4-1 shows the location of the existing sewer force main relative to the Campus Park project. The lift station which was intended to use the force main has yet to be constructed by the Hewlett-Packard/Campus Park project.

FIGURE 4-1

CAMPUS PARK PROJECT EXISTING OFFSITE SEWER SYSTEM

\\PACIFIC\DWG\669009\FIGURES-2009\FIGURE-4-1.DWG 03-17-09 14:25:03 LAYOUT: FIGURE

Wastewater Treatment and Disposal

The gravity sewer in Pala Road (Highway 76) is part of the backbone sewerage system for the Rainbow Municipal Water District. This gravity sewer extends west and south and includes Lift Station No. 1 and Lift Station No. 2 and their respective force mains as it conveys raw sewage to the City of Oceanside sewer system in North River Road and Stallion Drive.

The Rainbow Municipal Water District owns treatment and disposal capacity in the City of Oceanside's San Luis Rey Wastewater Treatment Plant. The May 2006 Wastewater Master Plan Update discusses the existing capacity ownership to be 1.5 million gallons per day.

Existing Sewer System Capacity

The Campus Park project has sewer capacity rights for 850 EDUs of sewer system connections to the Rainbow Municipal Water District. This capacity includes conveyance, treatment, and disposal of sewage; the conveyance of sewage is within the backbone sewer system operated by Rainbow Municipal Water District. Treatment and disposal is provided by the City of Oceanside's wastewater treatment plant. The sewage conveyance system begins on the west side of the Interstate 15 Freeway and extends through the City of Oceanside to the San Luis Rey Wastewater Treatment Plant.

CHAPTER 5

EVALUATION OF EXISTING FACILITIES AND RECOMMENDED SEWERAGE FACILITIES

The purpose of this chapter is to summarize the analyses that we have performed to determine the required onsite improvements for the Campus Park project. This chapter will also discuss the offsite improvements needed to convey sewage generated on the project to the backbone sewerage system for the Rainbow Municipal Water District. Finally, this chapter will present alternatives for sewer service for the sewage generated in excess of the 850 EDU capacity rights the project currently owns in the Rainbow Municipal Water District.

ONSITE SEWER SYSTEM

The onsite sewer system proposed for the Campus Park project will consist of new gravity sewer mains generally flowing south and west, and a new sewer lift station which will pump sewage flows west across the Interstate 15 Freeway through the Pala Road bridge. These facilities are discussed in greater detail in the following paragraphs.

Onsite Gravity Sewer System

The onsite gravity sewer system for the Campus Park project will consist of primarily 8" diameter collector gravity sewers. Exhibit A at the back of this report presents a layout of the proposed sewer system within the project. In Horse Ranch Creek Road, a 10" and 12" sewer line will be necessary because of the flatter grade of the proposed road and greater flows in this pipe since it is a collector sewer for the project.

Our preliminary sizing indicates that 10" and 12" sewer mains are needed in Horse Ranch Creek Road and Pankey Place. A 15-inch sewer main is needed in Pankey Road to the new sewer lift station in order to accommodate ultimate project sewage flows including flows from the Plant B Interceptor. These recommended sewer main sizes assume that no sewage generated by the Campus Park project enters into the existing 12-inch Plant B Collector sewer system. The recommended gravity sewer main sizes will accommodate the flows from the Palomar College site which has 100 EDUs of sewer capacity.

New Onsite Sewer Lift Station

A new sewer lift station is proposed to be constructed within the Campus Park project to provide pumping capacity for the build-out of the Campus Park project. For all sewer service scenarios, all the sewage generated by the build-out of the Campus Park project will be pumped by this station. Thus, all sewage generated by the project will gravity flow to this lift station.

The lift station will be designed to accommodate one of two sewer service scenarios. Under the scenario that sewer treatment and disposal by the Rainbow Municipal Water District for all 1,178.1 EDUs generated by the Campus Park project will be accommodated by systems to the west of Interstate 15, the lift station will pump all the collected flows through the existing 12" force main in Pala Road which was installed by the Hewlett-Packard Campus Park project in 1988 (see Figure 4-1). This existing force main will convey the pumped sewage across the Interstate 15 Freeway and connect to the existing gravity sewer in Pala Road which flows to the City of Oceanside.

Under the scenario in which Rainbow Municipal Water District will only provide service to 850 EDUs of capacity in their system to the west of Interstate 15, the lift station will split the incoming ultimate flows such that 850 EDUs of capacity are delivered through the existing 12" force main in Pala Road across Interstate 15 and the remaining capacity for 328.1 EDUs is pumped to the proposed reclamation plant being constructed for the Pardee Homes development project. Under this scenario, the reclamation plant will be expanded to accommodate the additional 328.1 EDUs capacity that will be needed by Rainbow Municipal Water District.

Pumping Capacity for Entire Campus Park Project. For either sewer service scenario presented above, all flows generated by the Campus Park project will flow to the proposed sewer lift station which will be operated by the Rainbow Municipal Water District. Pumping capacity for the new lift station will be based upon the peak wastewater flow generated by the Campus Park project times the 1.3 peak pumping safety factor. From Chapter 3, the peak sewage flow from the Campus Park project is 706 gpm. Thus, the minimum firm pumping capacity at the new lift station for the Campus Park project will be 918 gpm.

Two additional flow components may be added to the Campus Park firm pumping capacity requirement. One component is flow from the Palomar College campus which is located between the Campus Park project boundary and the Interstate 15 Freeway. The current estimate of sewage flow from the Palomar College is 100 EDUs of capacity. This equates to 25,000 gpd of flow, or 17.4 gpm. Using the peaking equation from the District's design criteria presented in Chapter 2, the peaking factor for the Palomar College flow is 4.1. Thus the peak sewage flow from the Palomar College site is 72 gpm; the required pumping capacity is then 94 gpm.

The second flow component involves the concept of diverting the gravity sewage flow in the existing Plant B Interceptor to the new Campus Park sewer lift station. This approach would address the Wastewater Master Plan Update deficiency in the capacity of the Plant B Interceptor as well as eliminate the need for an upgrade or re-build of the existing Plant B Sewer Lift Station. Combining flows into the proposed Campus Park sewer lift station would reduce capital costs for sewer system improvements as well as reduce long-term operation and maintenance costs to the District because of consolidating pumping facilities at one location.

The capacity required for ultimate flow in the Plant B Interceptor is estimated at this time based upon the ultimate system evaluation provided in the Wastewater Master Plan Update, May 2006. Table 5-2 of the Wastewater Master Plan Update indicates a peak wet weather flow of 560 gpm. The corresponding pumping capacity would be 1.3 times that or 728 gpm.

When combining several service areas into a single lift station, the lift station pumping capacity is not the combined pumping capacity of each service area. This is because of the effect of the peaking factor which decreases as the total flowrate increases. Thus, we need to add the average sewage flow from each of the service areas and then peak that total flow to obtain the lift station pumping capacity.

The average flow for the Campus Park and Palomar College projects is readily available (1,178.1 EDUs for Campus Park and 100 EDUs for Palomar College). For the Plant B Interceptor flows, the average flow must be backed out of the peak flow by trial and error. The peak flow of 560 gpm for the Plant B Interceptor is equivalent to an average flow of 160 gpm and a peaking factor of 3.5.

Thus the average sewage flows from the three service areas influent to the Campus Park Sewer Lift Station are the following:

Campus Park project	205.0 gpm	1,178.1 EDUs
Palomar College project	17.4 gpm	100 EDUs
Plant B Interceptor	160 gpm	921.6 EDUs
Totals	382.4 gpm	2,199.7 EDUs

The total number of EDUs results in a total population of 5,499.3. Using the peaking factor chart, and interpolating between 5,000 and 10,000 people, the peaking factor is 3.08. Then the total peak flow is 1,177.8 gpm. Multiplying by 1.3 calculates the required pumping capacity of 1,531 gpm.

As a minimum, the proposed Campus Park sewer lift station could be designed for a firm pumping capacity of 918 gpm to accommodate only the Campus Park project. The proposed scenario is that the lift station be designed for a maximum firm pumping capacity of 1,531 gpm in order to accommodate all of the Campus Park project, the Palomar College site, and the ultimate Plant B Interceptor flows.

Lift Station Design Parameters. The lift station is proposed to be a submersible wet well installation in conformance with the Rainbow Municipal Water District design requirements as outlined in the District's Domestic Water & Sanitary Sewer Construction Manual, August 2006, Section 2.03.C. Pump Station Design. The Campus Park project will submit a pre-design report outlining all the components of the proposed sewer lift station and addressing pumping capacity and future expansion potential.

PLANT B COLLECTOR SEWER

The Rainbow Municipal Water District Wastewater Master Plan Update, May 2006, identifies the existing 12-inch Plant B Collector sewer as requiring to be upgraded based on future flow projections. The ultimate gravity sewer size recommended is 15-inch diameter. This size sewer line will accommodate the Campus Park project build out flows; however, the Campus Park project is not proposing to use this gravity sewer system to convey its sewage to the existing gravity sewer line in Pala Road. The reason is that the Plant B Sewer Lift Station would need to be upgraded to handle the Campus Park sewage flows.

The Campus Park project is proposing to construct a new sewer lift station and pump across the Interstate 15 Freeway in the existing 10" and 12" force main which is a more direct route to the existing gravity sewer line in Pala Road. This approach will avoid the need to construct a costly upgrade to the Plant B Interceptor. It will also provide the District with an opportunity to participate in the construction of a new lift station by providing pumping capacity to handle all the existing and future flows in the Plant B Interceptor. By diverting flows from the Plant B Interceptor to the new Campus Park lift station, the District would eliminate the need for upgrading the Plant B Interceptor sewer and the Plant B Pump Station.

SEWAGE TREATMENT AND DISPOSAL OPTIONS

By agreement between the Rainbow Municipal Water District and the Campus Park project, the Campus Park project currently has 850 EDUs of sewage conveyance, treatment, and disposal capacity within the Rainbow Municipal Water District. This capacity is included in the conveyance, treatment, and disposal capacity for which the District has contracted with the City of Oceanside. These existing 850 EDUs of capacity account for approximately 72 percent of the proposed Campus Park project based on the proposed land use plan. Beyond the 850 EDUs, additional conveyance, treatment, and disposal capacity will be needed for 328.1 EDUs within the Campus Park project.

Alternatives for Sewer Capacity in Rainbow MWD

Generally, there are two ways that sewage treatment and disposal capacity can be provided to the Campus Park project. These two alternatives expect that the Rainbow Municipal Water District will provide sewer service to all of the Campus Park project since the project is entirely within the District's service area boundary. The two alternatives are:

1) Sewage flow for 1,178.1 EDUs will be handled by Rainbow Municipal Water District's conveyance, treatment, and disposal system to the west of Interstate 15; or

2) Sewage flow for 850 EDUs will be handled by Rainbow Municipal Water District's conveyance, treatment, and disposal system to the west of Interstate 15 and the remaining 328.1 EDUs will be serviced by a locally constructed water reclamation plant in which Rainbow Municipal Water District will own treatment capacity sufficient for 328.1 EDUs.

Under the first alternative noted above, the Rainbow Municipal Water District can either obtain additional treatment and disposal capacity in the City of Oceanside's sewer treatment plant and outfall, or the Campus Park project can purchase additional sewer connections within the District which have been reserved by property owners in the past but have not been paid in full nor connected to the District's system.

The second alternative noted above is dependent upon another public agency constructing a water reclamation plant and Rainbow Municipal Water District participating in the plant for 328.1 EDUs capacity. This alternative is viable because the Pardee Homes development which is proposed to the east of the Campus Park project will need sewer service and is currently proposing a water reclamation plant on its tentative map.

Wastewater Treatment Capacity. The Pardee Homes project is planning to construct a water reclamation facility to treat all of the sewage generated on the Pardee Homes development site. The facility will produce effluent quality suitable for irrigation, and the intent is to recycle all the treated water by means of onsite irrigation. Effluent disposal redundancy for the treatment plant is planned to be provided by percolation ponds.

For the Campus Park project to participate in this treatment facility, the wastewater treatment plant will need to be increased in capacity by 328.1 EDUs. This expansion of facilities is proposed to occur within the treatment plant site on the Pardee Homes property. In addition, the Campus Park project will need to provide percolation pond area of sufficient capacity to dispose of all the treated effluent generated by their 328.1 EDUs of treatment capacity. This percolation pond area is being provided within the Campus Park property to the north of Pankey Place along the eastern property boundary as shown in Exhibit A at the back of this report.

CAMPUS PARK
PROJECT BOUNDARY

N

SCALE: 1" = 400'

MACTHLINE
SEE SHEET 2

MULTI-FAMILY
RESIDENTIAL

TOWN
CENTER

TOWN
CENTER

SPORTS
COMPLEX

PROFESSIONAL
OFFICE

PROF.
OFFICE

HORSE RANCH CREEK ROAD

10" SWR

10" SWR

12" SWR

PALOMAR COLLEGE SITE

EXISTING PLANT B INTERCEPTOR

INTERSTATE 15 FREEWAY

EX. 10" SWR

LEGEND

- EXISTING GRAVITY SEWER
- EXISTING FORCE MAIN SEWER
- PROPOSED GRAVITY SEWER
- PROPOSED FORCE MAIN SEWER

NOTE: ALL SEWER SIZES 8" UNLESS NOTED OTHERWISE

EXHIBIT A

CAMPUS PARK PROJECT PROPOSED ONSITE SEWER SYSTEM

SHEET 1 of 2

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LEGEND

EXISTING GRAVITY SEWER

EXISTING FORCE MAIN SEWER

PROPOSED GRAVITY SEWER

PROPOSED FORCE MAIN SEWER

N

SCALE: 1" = 400'

MACTHLINE SEE SHEET 1

PROPOSED PARALLEL GRAVITY SEWER BY PARDEE HOMES, 8" MINIMUM

HORSE RANCH CREEK ROAD

12" SWR

MULTI-FAMILY RESIDENTIAL

MULTI-FAMILY RESIDENTIAL

PERCOLATION POND AREA

OPEN SPACE

CAMPUS PARK PROJECT BOUNDARY

PROPOSED 6" EFFLUENT DISPOSAL FORCE MAIN

PALA ROAD

PROPOSED WATER RECLAMATION PLANT BY PARDEE HOMES

PROPOSED 6" SEWER FORCE MAIN TO RECLAMATION PLANT

PROPOSED 12" SEWER FORCE MAIN

(HWY 76)

PANKEY PLACE

PANKEY ROAD

MULTI-FAMILY RESIDENTIAL

CONNECT NEW FORCE MAIN TO EXISTING 12" FORCE MAIN

15" SWR

EX. 12" SWR

EX. 12" FM

PROPOSED CAMPUS PARK SEWER LIFT STATION

EXISTING 12" SEWER TO BE ABANDONED

CONNECT PLANT B INTERCEPTOR FLOWS TO THE CAMPUS PARK LIFT STATION WITH 15" GRAVITY SEWER

EXISTING PLANT B INTERCEPTOR

PALA MESA DR. (EXTENSION)

PALOMAR COLLEGE SITE

OPEN SPACE

EX. 10" SWR

INTERSTATE 15 FREEWAY

EXHIBIT A

CAMPUS PARK PROJECT PROPOSED ONSITE SEWER SYSTEM

SHEET 2 of 2

\\PACIFIC\DWG\669009\FIGURES-2009\07-SEWER_EXHIBIT-A-2.DWG 03-16-09 14:06:29 LAYOUT: EXHIBIT

WATER SUPPLY ASSESSMENT AND VERIFICATION REPORT

RAINBOW
MUNICIPAL WATER DISTRICT
Committed to Excellence

June 20, 2005

Passerelle
402 West Broadway, Suite 2175
San Diego, CA 92101

RE: Campus Park SB610 and SB221 Compliance

To Whom It May Concern:

Enclosed please find a copy of the above-referenced information sent to the County of San Diego Department of Planning and Land Use for your records.

If you have any questions, please feel free to contact us at (760) 728-1178.

Sincerely,

Dawn Washburn
Executive Secretary

/dmw

3707 Old Highway 395 • P.O. Box 2500 • Fallbrook, CA 92088-2500
(760) 728-1178 • Fax (760) 728-2575 • www.rainbowmwd.com

FILE COPY

RAINBOW
MUNICIPAL WATER DISTRICT
Committed to Excellence

June 1, 2005

County of San Diego
Department of Planning and Land Use
5201 Ruffin Road, Suite B
San Diego, CA 92123

RE: Campus Park SB610 and SB221 Compliance

Dear Mr. Sibbet:

The Rainbow Municipal Water District is hereby transmitting the Water Supply Assessment and Verification Report and a copy of Resolution 05-18 as requested in your letter dated January 18, 2005.

If you have any questions, or comments concerning this matter, please contact Chris Trees at (760) 728-1178.

Sincerely,
RAINBOW MUNICIPAL WATER DISTRICT

Greg L. Ensminger
General Manager

cc: File

RESOLUTION NO. 05-18

RESOLUTION OF THE BOARD OF DIRECTORS OF THE RAINBOW MUNICIPAL WATER DISTRICT ADOPTING THE CAMPUS PARK PROJECT WATER SUPPLY ASSESSMENT AND VERIFICATION REPORT

WHEREAS the California Water Code Section 10915 and 10631 requires a water supplier to prepare and adopt a water supply assessment and verification report for new developments over 499 units; and

WHEREAS The County of San Diego has identified the Rainbow Municipal Water District as the proposed purveyor of a public water system for the Campus Park Project; and

WHEREAS the District has prepared the report, made the report available for public inspection, and discussed the report at a public meeting thereon; and

WHEREAS it is in the interest of the District to adopt the Water Supply Assessment and Verification Report for the Campus Park Project;

NOW THEREFORE BE IT RESOLVED DETERMINED AND ORDERED by the Board of Directors of the Rainbow Municipal Water District as follows:

1. That the WATER SUPPLY ASSESSMENT AND VERIFICATION REPORT, a copy of which is on file with the District be and it is approved and adopted as required by the California Water Code.

2. That the Secretary of the District be and she is authorized and directed to file with the County of San Diego of the State of California a copy of the District's report by May 18, 2005.

MOTION PASSED at an adjourned regular meeting of the Board of Directors of the Rainbow Municipal Water District held on May 11, 2005 by the following votes, to wit:

AYES:	Directors Sundram, Hatfield, Bopf
NOES:	Director Griffiths
ABSENT:	Director Glick
ABSTAIN:	None

Lawrence J. Sundram, Board President

ATTEST:

Dawn Washburn, Board Secretary

Rainbow Municipal Water District

WATER SUPPLY ASSESSMENT AND VERIFICATION REPORT

Campus Park Specific Plan and General Plan Amendment

April 2005

Approved: May 11, 2005

Greg L. Ensminger
General Manager
Rainbow Municipal Water District

Rainbow Municipal Water District
SB 610 & SB 221
Water Supply Assessment and Verification
April 2005

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Executive Summary

The Department of Planning and Land Use of the County of San Diego has recognized Rainbow Municipal Water District (District) as the logical Public Water System (PWS) for the proposed Campus Park Specific Plan and General Plan Amendment (Project). The County is performing the environmental review of the proposed development as the "Lead Agency". The County in a letter dated January 18, 2005 has requested that the District prepare a Water Supply Assessment and Verification Report that complies with the laws generally known as SB610 and SB221. These laws require that the PWS review the development to assess and verify the availability of adequate water supplies for the proposed development, existing customers and other planned developments.

The proposed development is currently located in the District. In 2001, the District prepared a Water Master Plan and performed water distribution impact analysis to determine the distribution system improvements required to assure that the District facilities would improve service to its' existing customers and provide adequate service levels for the additional customers. This study identified improvements that are now being implemented through the Capital Improvements Program (CIP).

Currently the District relies solely on "imported water" provided by the San Diego County Water Authority (CWA) or the Metropolitan Water District of Southern California (MWD). To comply with the requirements of SB610 and SB221, the water supply planning for the District, the County Water Authority and the Metropolitan Water District will be discussed. The respective service areas are shown in Figures 1 and 2 that follow.

Figure 1 - Metropolitan Water District of Southern California Service Area

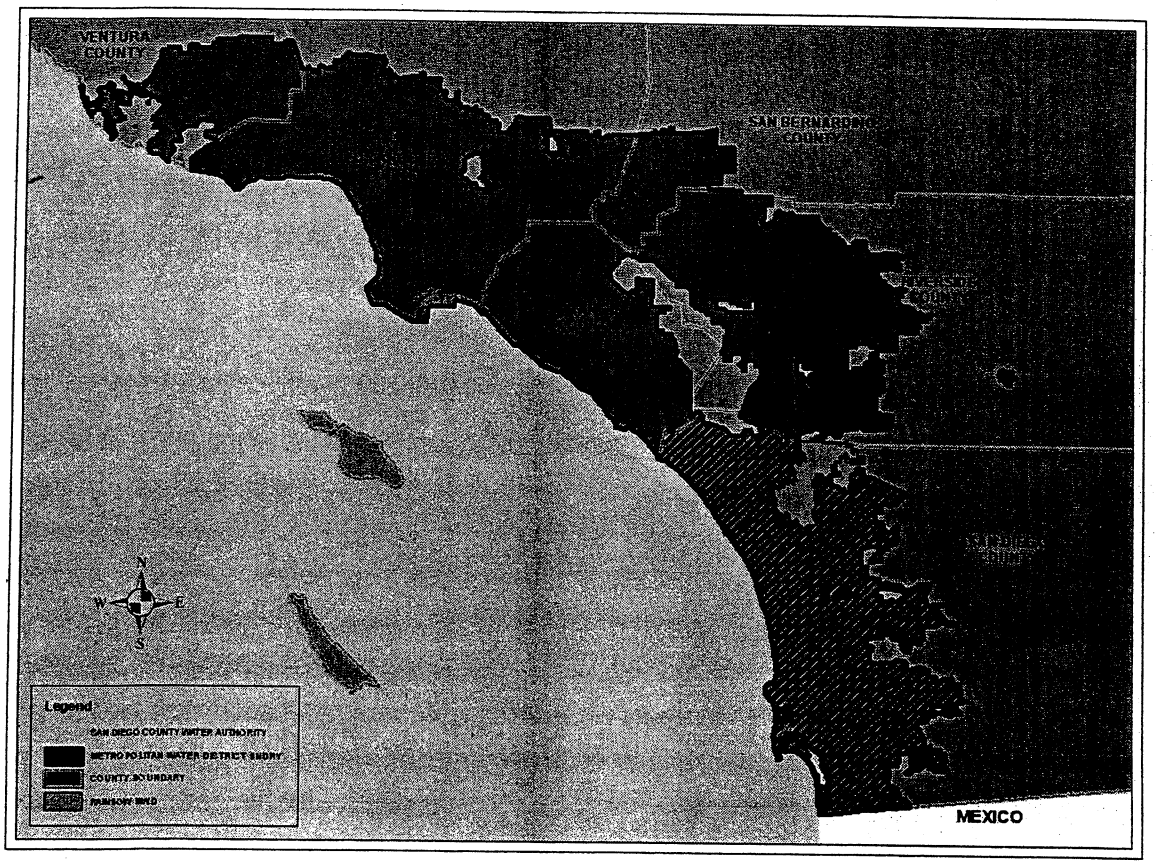
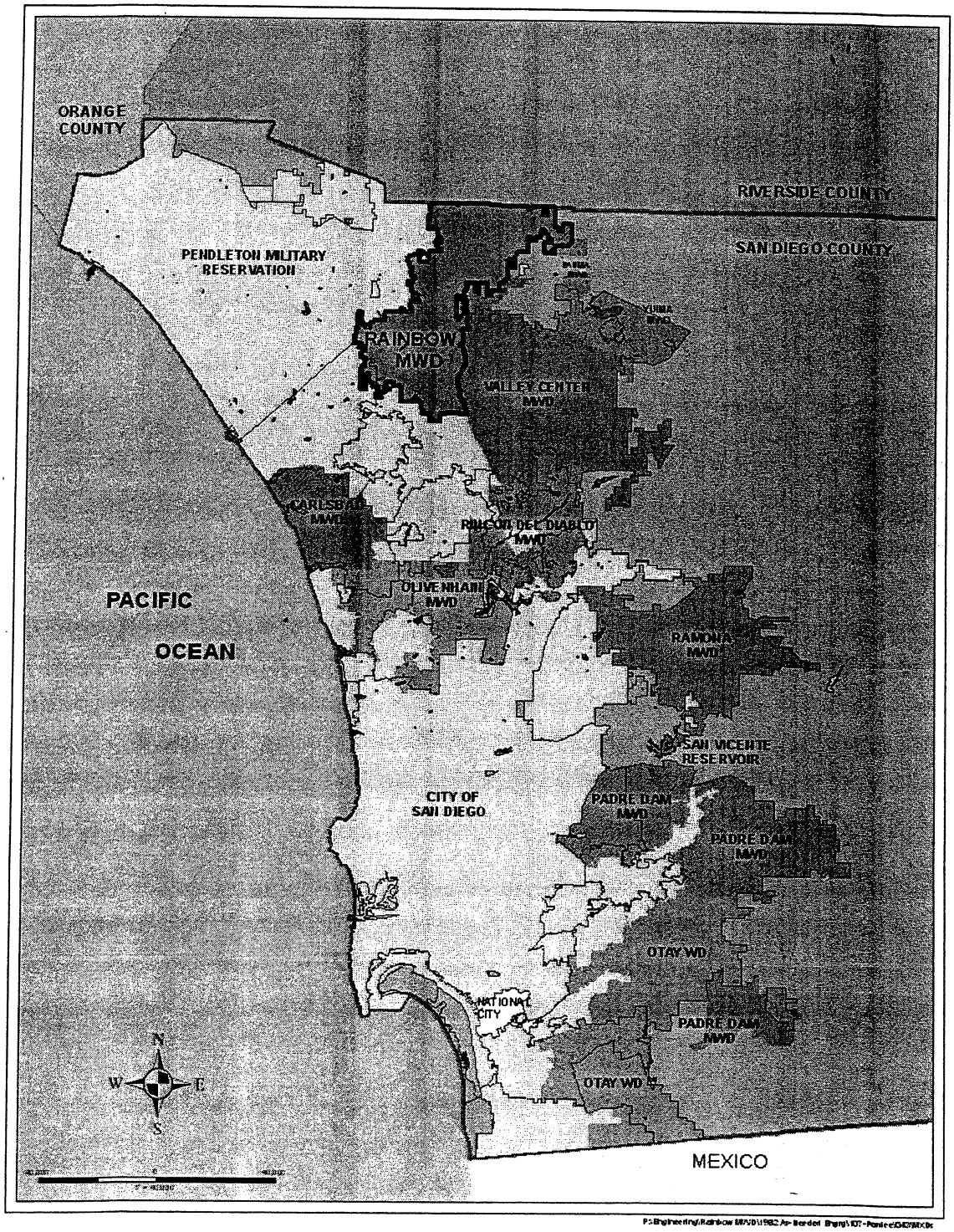


Figure 2 - SDCWA and Rainbow Municipal Water District



The District finds that adequate supplies of water will be made available to the proposed development upon completion of all water system improvements that are conditions of the approval of the proposed Project.

The source of the water supply is the MWD, SDCWA and the District. Planning for water supply purposes for each of these three agencies rely on the population and land use projections provided by the San Diego Association of Governments (SANDAG) which encompasses San Diego County. As such, the proposed development has been included in county-wide population and land use projections. The District has included the water demands from the proposed development in its water planning processes.

The following tables compare the service areas and the water supply/demand projections for the MWD, SDCWA, District and proposed development.

Table 1 shows that the proposed development increases the served area (acres) of the District by approximately 1.0%

Table 1 - Area Comparisons

Entity	Sq.Mi.	Acres	% of Met	% of CWA	% of RMWD
Metropolitan Water District	52,000	33,280,000	100.0%	N/A	N/A
County Water Authority	1,457	932,480	2.8%	100.0%	N/A
Rainbow MWD	78	49,920	0.2%	5.4%	100.0%
Proposed Campus Park	0.8	500	0.0%	0.1%	1.0%

Table 2 presents the impacts of the development on the water supply plans for the future planning horizon. (2025). As shown, the proposed development represents approximately 2.8% of Rainbow's projected 2025 water demands. The proposed development water demands represent approximately 0.1% of the County Water Authority projected demands and a negligible percent of the Metropolitan Water District projected demands.

Given the uncertainty and risks associated in long range water resource planning, the Metropolitan Water District has included in its future demands 500,000 Acre Feet per Year (AFY) of "Planning Buffer". This is to allow for unforeseen developments and changes in land use and population changes that may occur and provide a high degree of reliability.

Table 2 - Demand Comparisons

Entity	2025 Demand	% of Met	% of CWA	% of RMWD
Metropolitan Water District*	6,904,508	100%	N/A	N/A
County Water Authority**	843,123	12%	100%	N/A
Rainbow MWD***	38,496	1%	5%	100%
Project****	1,060	0.0%	0.1%	2.8%

* From Table 5-2 Integrated Water Resources Plan Updated, Supply
** From Table 1, SDCWA 2004 Annual Water Supply Report
*** From Rainbow MWD (Extrapolated from UWMP 2000)
**** Total build out of project by 2025

To determine the adequacy of planning for water supplies for proposed development, the remainder of this report focuses on the separate, but interdependent planning activities of the water supply agencies that serve the proposed Project.

In conclusion, the District affirms that sufficient water supply for the demands proposed by the Campus Park Specific Plan and General Plan Amendment will be made available, through the District, the County Water Authority and the Metropolitan Water District.

The information and conclusions presented in this report are based upon sources (MWD and SDCWA) outside the control of RMWD; therefore, there is no affirmation regarding the validity of the projections or availability of future water supplies and RMWD takes no responsibility.

Section 1 - Purpose

This Water Supply Assessment and Verification Report (WSAV Report) has been prepared by the Rainbow Municipal Water District (Rainbow) in consultation with the San Diego County Water (Water Authority) and the County of San Diego pursuant to Public Resources Code Section 21151.9, and California Water Code Sections 10631, 10657, 10910, 10911, 10912, and 10915 referred to as SB 610 and Business and Professions Code Section 11010, and Government Code Sections 65867.5, 66455.3, and 66473.7 referred to as SB 221. SB 610 and SB 221 amended state law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires that the water purveyor of the public water system prepare a water supply assessment to be included in the environmental documentation of certain proposed projects. SB 221 requires affirmative written verification from the water purveyor of the public water system that sufficient water supplies are available for certain residential subdivisions of property prior to action on a tentative map.

The County of San Diego requested the WSAV Report as part of the environmental review of the Campus Park Specific Plan and General Plan Amendment (Project). The Project description is provided in Section 3 of this WSAV Report. The County of San Diego also requested that since the SB 610 and SB 221 requirements are substantially similar, that Rainbow prepare both the Water Supply Assessment and Water Verification concurrently. This WSAV Report is intended for use by the County of San Diego in its evaluation of the Project under the California Environmental Quality Act process. This WSAV Report evaluates water supplies that are or will be available during normal, single-dry year, and multiple-dry water years during a 20-year projection to meet existing demands, expected demands of the Project, and reasonably foreseeable planned future water demands served by Rainbow.

Section 2 - Findings

This WSAV Report finds that the water demand projections for the proposed Project were included in the water demand forecasts within the Urban Water Management Plans and other water resources planning documents of the Rainbow MWD, the Water Authority, and the Metropolitan Water District of Southern California (Metropolitan). The proposed development is located within the service area boundary of the District, the County Water Authority and the Metropolitan Water District. Each of these agencies relies on the SANDAG population and land use projections for the entire county and as such the proposed development has been incorporated into future population and water demand projections. Additionally the District has concluded that the water supplies identified in these water planning documents, contain significant supply buffers.

Specifically, the MWD Updated Integrated Resources Plan (2004) provides a buffer of 500,000 AFY for its customers. The buffer is provided to provide extra levels of reliability through contingency planning to address the "additional uncertainty in regional growth and water demand projections..."[1]. The proposed project would require approximately 1,060 AFY of water supplies necessary to serve the demands of the proposed Project. This WSAV Report demonstrates and verifies that there are sufficient water supplies over a 20-year planning horizon to meet the projected demand of the proposed Project and the existing and other planned development projects within the District.

Based on a normal water supply year, the five-year increments for a 20-year projection indicate projected water supply will meet the estimated water demand (31,117 acre-feet (ac-ft) in 2005 to 38,496 ac-ft in 2025). Based on dry year forecasts using a 2010 estimate, the estimated water supply will also meet the projected water demand, during single- and multiple-dry years scenarios. For a single dry year (demand 7% higher than normal year), a supply of 33,714 ac-ft (2010) within the Rainbow MWD service area is necessary, and for multiple-dry years, a supply of 34,130 ac-ft, 34,547 ac-ft, and 34,964 ac-ft, respectively, is necessary to meet demand[2].

Together, these findings verify that there is a sufficient water supply to serve the proposed Project and the existing and other planned projects of Rainbow MWD in both normal and dry year forecasts. This supply is further confirmed by the March 2003, Metropolitan produced document entitled, Report on Metropolitan's Water Supplies, A Blueprint for Water Reliability (March 2003 Report), which states that Metropolitan will have adequate supplies to meet dry-year and multiple dry-year demands within its service area over the next 20 years. The supplies have an additional 500,000 AFY supply buffer for contingencies.

1 Integrated Water Resources Plan 2003 Update, May 2004 Page 60, Risk and the Supply Buffer
2 Rainbow MWD Revised Calculations from UWMP plus project demands

Section 3 - Project Description

Passerelle, LLC has submitted an application to the County of San Diego for development of the Campus Park Specific Plan and General Plan Amendment. The Project encompasses approximately 500 acres and contains various land uses as proposed by Passerelle, LLC. The area includes approximately 216 acres of open space, 187 acres of residential land use, 72 acres of office/commercial, and 11 acres for a school site.

The County of San Diego has publicly announced its intent to initiate the preparation of an Environmental Impact Report for the Project in conformance with the California Environmental Quality Act and as set forth in Public Resources Code 21065. The Project is located in the County of San Diego and in the Fallbrook Community Planning Area.

The proposed project is composed of the following land uses.

Table 3 - Campus Park Specific Plan and General Plan Amendment Planning Areas

Planning Area	Acres	% of Area	Dwellings	% of Dwellings	DU/Acre
Single Residential R-1	12.9	2.7%	140	9.3%	10.9
Single Residential R-2	9.3	1.9%	50	3.3%	5.4
Single Residential R-3	12.1	2.5%	117	7.8%	9.7
Single Residential R-4	10.5	2.2%	52	3.5%	5.0
Single Residential R-5	8.3	1.7%	47	3.1%	5.7
Single Residential R-6	12.5	2.6%	61	4.1%	4.9
Single Residential R-7	13.7	2.8%	68	4.5%	5.0
Single Residential R-8	26.0	5.3%	107	7.1%	4.1
Single Residential R-9	42.0	8.6%	160	10.7%	3.8
Single Residential R-10	13.3	2.7%	157	10.5%	11.8
Multi-family R-11	5.3	1.1%	64	4.3%	12.1
Multi-family R-12	5.2	1.1%	94	6.3%	18.1
Multi-family R-13(A)	2.5	0.5%	60	4.0%	24.0
Multi-family R-13(B)	6.1	1.3%	146	9.7%	23.9
Multi-family C-2	5.0	1.0%	120	8.0%	24.0
Multi-family C-3	2.4	0.5%	58	3.9%	24.2
Elementary School S-1	11.3	2.3%			
Commercial C-1	3.9	0.8%			
Commercial C-2	5.0	1.0%			
Commercial C-3	2.4	0.5%			
Office/Professional OP-1	9.1	1.9%			
Office/Professional OP-2	21.1	4.3%			
Office/Professional OP-3	15.1	3.1%			
Office/Professional OP-4	15.4	3.2%			
Local Park	10.3	2.1%			
Open Space OS-1	17.2	3.5%			
Open Space OS-2*	97.7	20.1%			
Open Space OS-3	91.1	18.7%			
Total Acres	486.7	**Total EDU**	1501		

* Combined entries on County Table for OS-2

The proposed Project site is located along I-15, just north of the intersection of SR-76 within the Fallbrook Community Planning Area. The proposal is for a General Plan Amendment and a Special Plan Amendment for development of residential, civic, agricultural and open space land uses.

The estimated water demand for the Project is 1,060 acre feet per year (AFY).

The projected potable and recycled water demands associated with the Project have considered all of the above land uses and are incorporated into and used in this WSAV Report. The water demands for the proposed Project are included in the projected water demand estimates provided in Section 5 – Historical and Projected Water Demands.

The information and conclusions presented in this report are based upon sources (MWD and SDCWA) outside the control of RMWD; therefore, there is no affirmation regarding the validity of the projections or availability of future water supplies and RMWD takes no responsibility.

Section 4 – Rainbow Municipal Water District

The Rainbow Municipal Water District (District) was formed in 1953 under the Municipal Water District Act of 1911 (Section 7100 et. seq. of the California Water Code). The District joined the San Diego County Water Authority (Authority) and the Metropolitan Water District of Southern California (MWD) that same year to acquire the right to purchase and distribute imported water throughout its service area.

The District has primarily agricultural water demand. Within the agricultural development is a growing rural residential demand on large lots and potential for greater residential demand in the future. The District has an area of approximately 49,800 acres (as shown on Figure 1) of which only 17,000 acres are served with water. Present demand is about 32,000 acre-feet per year of which 22,000 acre-feet are for agricultural irrigation. In a dry year, the irrigation demand would increase by about 7%. The District is responsible for the operation and maintenance of all water supply and distribution facilities, maintains all water meters, and bills all customers on a monthly basis.

The 2000 population within the District's boundaries was approximately 17,800. Based on projections by the San Diego Association of Governments (see Appendix) the population will increase to 21,800 in 2010, and is projected to reach 27,200 by the year 2020.

The District has seen dramatic agricultural expansion during the 47 years of its existence. Approximately 75-80% of the water supplied by the District is for agricultural purposes. Agricultural use is mainly for avocado and citrus groves, with some development in kiwis and other exotic plantings. The cost of water is the major determining factor in the choice of irrigation method. Basically, high water prices dictate irrigation methods with high application efficiency.

Agricultural use is predominantly for avocado and citrus groves. Over half of these plantings have occurred in the last 25 years and are irrigated with highly efficient irrigation systems. It is not likely that significant water reductions can be made in irrigation use by conservation awareness programs. Where an older or poorly managed system might provide an opportunity for savings, the rapidly increasing cost of water and pumping tends to produce the change. The District should continue to monitor agricultural water use but conservation efforts are unlikely to result in additional reduction in use.

The District also offers wastewater collection services. The District currently serves approximately 7,625 customers, or 3,200 equivalent dwelling units, resulting in approximately 0.85 million gallons per day of wastewater generated. Wastewater is collected and transported to the San Luis Rey Wastewater Treatment Plant in Oceanside for ultimate ocean disposal.

4.1 Urban Water Management Plan

In accordance with the California Urban Water Management Planning Act, the Rainbow MWD Board of Directors adopted an Urban Water Management Plan (UWMP) in September 2000 and it was subsequently submitted to the California Department of Water Resources (DWR). As required by law, Rainbow MWD's UWMP includes projected water supplies required to meet future demands through 2020. In accordance with Water Code Section 10910 (c)(2) and Government Code Section 66473.7 (c)(3), information from Rainbow MWD's UWMP along with updated supplemental information has been utilized to prepare this WSAV Report.

Section 5 – Historical and Projected Water Demands

The projected demands for the Rainbow service area are based on the SANDAG's most recent growth forecast data, and include figures on future population, housing, and employment. This land use information is used in the preparation of Rainbow's UWMP to develop the forecasted demands. The Water Authority and Metropolitan also use SANDAG's most recent regional growth forecast to calculate future demands within their respective service areas. This provides for consistency between the retail and wholesale agencies water demand projections, thereby ensuring that adequate supplies are being planned for Rainbow's existing and future water users. In addition, SANDAG's growth forecasts are based on the land use policies of the cities and county within the San Diego County region, so planned growth is included in the water demand forecasts of Rainbow. The projected potable water demands for Rainbow MWD service area are shown in Table 4.

Table 4 - Projected Potable Water Demands

Customer Type	2000	2005	2010	2015	2020	2025**
Population	17,767	20,106	21,793	24,308	27,156	30,004
Residential Demand* (AFY)	7,708	9,002	9,982	11,521	13,698	15,875
Agricultural	21,015	22,115	21,526	21,935	22,278	22,621
Total (AFY)	28,723	31,117	31,508	33,456	35,976	38,496

** From UWMP 2000*
*** Extrapolated from UWMP 2000*

5.1 Demand Management (Water Conservation)

Demand management, or water conservation, is frequently the lowest-cost resource available to any water agency. Water conservation is addressed in Rainbow's UWMP as an element of the long-term strategy for meeting present and future water needs. The goals of the Rainbow water conservation programs are to: 1) reduce the demand for imported water; 2) to contribute to a more reliable water supply; and, 3) demonstrate continued commitment to the *Best Management Practices* (BMP).

In 1991, the County Water Authority on behalf of its 23 member agencies, signed a landmark document, the "Memorandum of Understanding Regarding Urban Water Conservation in California.", which created the California Urban Water Conservation Council (CUWCC) in an effort to reduce California's long-term water demands.

Water conservation programs are developed and implemented on the premise that water conservation increases water supply by reducing the demand on available supply, which is vital to the optimal use of the region's supply resources. Rainbow participates in many water conservation programs designed and typically operated on a shared-cost participation program basis among the Water Authority, Metropolitan, and their member agencies

As a requirement for development projects within the unincorporated areas of the county, water conservation measures will be incorporated into the Project including the State mandated 14-Best Management Practices for water conservation such as installation of ultra low-flow toilets (ULFT), development of a water conversation plan for all landscape improvements, and the use of recycled water (if available), all of which are typical requirements of development projects.

Rainbow has consistently implemented elements of the BMP for water conservation in its water resource management strategy. As a member of the Water Authority, Rainbow also benefits from regional programs performed on behalf of its member agencies.

The BMP programs implemented by Rainbow and/or regional BMP programs implemented by the Water Authority that benefit all member agencies include the following:

- **BMP 1 - Water Survey Programs for Single-Family and Multi-Family Residential Customers** – The Residential Survey Program is free to residential customers and has been available since 1991. The survey includes a review of indoor water use, help with identifying indoor leaks and an informational packet that includes information about other water conservation programs. Since FY 2000, 10 residential surveys have been performed.

- **BMP 2 - Residential Plumbing Retrofit** – The District has traditionally been dominated by agricultural water demands and has not strongly focused on retrofitting low density residential areas. Instead the District has relied on encouraging water efficient plumbing in new residential areas.

- **BMP 3 - System Water Audits, Leak Detection, and Repair** - Rainbow maintains an active distribution system auditing program. This program evaluates the system's "unaccounted for water loss" with a goal to stay under ten percent. Rainbow regularly conducts ongoing internal distribution system leak detection surveys the most recent being completed in 2004.

  The industry standard, based on the American Water Works Association for unaccounted for water loss, is no more than 9 to 10%. Over the last five years, Rainbow's unaccounted for water loss averaged 3.75% of the total supply, which is well below the industry standard thresholds.

  Rainbow has adopted and is currently using a wide range of operational and financial policies and practices to insure the efficient use of the available water supply.

- **BMP 4 - Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections -** Rainbow requires the installation of water meters on all services throughout its distribution system. Generally Rainbow's meters are classified as Agricultural or Residential depending on the tax status and type of water supply provided.

- **BMP 5 – Large Landscape Conservation Programs and Incentives -** From 1991 to 2004, large landscape (currently defined as landscape with one acre or more) irrigation surveys were available to customers at no charge through the *Professional Assistance for Landscape Management (PALM)* program, sponsored by the Water Authority. During the survey, the survey team examined the irrigation system for distribution uniformity, matched irrigation components, and controller scheduling. The team would then calculate and recommend a water budget for the site based on the size of the landscape, the plant material, and the climate.

  Since Fiscal Year 2000-2001, 7 large landscape irrigation surveys have been performed within the District.

- **BMP 6 – High-Efficiency Washing Machine Voucher Program -** New technology in washing machine design provides for more efficient water use and savings. Over the past few years, an increasing number of residential customers have taken advantage of the $100 voucher offer. HEWs installed in multi-family laundry rooms, Laundromats, and commercial sites are eligible to receive a $300 voucher through the commercial HEW program. Vouchers are offered for residential, commercial, institutional, and industrial customers.

  Since Fiscal Year 2000-2001, Rainbow has distributed over 170 high-efficiency washer (HEW) vouchers to its customers.

- **BMP 7 – Public Information Programs -** Rainbow promotes water conservation in coordination with the Water Authority and Metropolitan. Rainbow independently distributes public information through its website, bill inserts, annual Consumer Confidence Report, newsletters, brochures, and participation in year-round special events.

- **BMP 8 – School Education Programs -** Rainbow is supported by the County Water Authority and the Metropolitan Water District in providing water conservation instruction to elementary school-aged children. Also, in conjunction with Water Awareness Month, Rainbow supports a North Country regional poster contest. The water-related theme changes from year-to-year and is open to any 4thgrade student living or attending school within Rainbow's service area.

A variety of youth programs and educator training are available for grades K-12 though the Water Authority. Available programs include: School Theater Program, Mini-Grant Program, Xeriscape Gardening Teacher Workshop, Youth Merit Patch Program, 4th Grade Presentations, and various kits and teaching guides. Additional programs may also be available through the Metropolitan Water District and other Conservation organizations.

- **BMP 9 – Conservation Programs for Commercial, Industrial, and Institutional Accounts** - Rainbow provides vouchers for water efficient devices to its commercial, industrial, and institutional accounts through shared-funding programs with the Water Authority and Metropolitan. Vouchers are available for low-flow and waterless urinals ($95), $300 for commercial clothes washers installed in Laundromats and multi-family common areas, $95 for commercial ULFTs, and $500 for cooling tower conductivity controllers. Incentives are now also available for multi-load commercial clothes washers, pre-rinse sprayers, water brooms, and x-ray photo processing machines.

- **BMP 10 – Wholesale Agency Assistance Program** - This BMP applies only to wholesale agencies. The Water Authority provides conservation-related technical support and information to its member agencies, including ULFT and High Efficiency Clothes Washer Program vouchers, residential surveys; partial funding for water efficient devices in commercial, institutional, and industrial properties; large-turf irrigation; and conservation-related rates and pricing. The Water Authority typically manages the programs on behalf of its member agencies and contributes one-quarter of the cost for the incentive or survey. Rainbow contributes another one-quarter of the cost, while Metropolitan typically provides one-half of the incentive.

- **BMP 11- Conservation Pricing** - Rainbow is currently evaluating an increasing block (or tiered rate), conservation-motivated pricing. Although rates are the same for all water users, the movement between tiered pricing is specific for each water-use classification. The rates for all water-use classifications are based on accelerated block structures; as more units are consumed, a higher unit rate is charged.

- **BMP 12 – Conservation Coordination** -Rainbow uses contracted consultants through the Water Authority to implement residential, multifamily, and commercial audits; to conduct agricultural surveys; and, to monitor the high efficiency washer and ultra low-flush toilet voucher programs.

- **BMP 13 – Water Waste Prohibition** - Rainbow's Board of Directors adopted Ordinances 90-1, 91-5 and 91-8 to provide specific recourse for preventing the waste of water and to improve conservation methods.

- **BMP 14 – Residential ULFT Replacement Program -** Rainbow has established an ultra low-flush toilet (ULFT) replacement program in 1991 in cooperation with the County Water Authority. Residential customers are eligible to receive $75 off the cost of a ULFT toilet. In addition, a $95 voucher is available toward the purchase of a dual-flush toilet, which has been found to use 30% less water than a standard ULFT.

  Since Fiscal Year 200-2001, the District has provided funding for over 650 ULF Toilets.

  Additional conservation or water use efficiency measures or programs practiced by Rainbow include the following:

- **Agricultural Water Conservation** - According to a study conducted by Mission Resource Conservation District, of the agricultural surveys conducted in North San Diego County in FY 2003-2004, 38% of the irrigation systems functioned below industry standards. In an effort to provide conservation assistance for its agricultural water users, Rainbow has offered irrigation system efficiency audits for agricultural properties consisting of two or more acres since 1991.

- **Supervisory Control and Data Acquisition System -** In 1998, Rainbow implemented a *Supervisor Control and Data Acquisition* (SCADA) system to control, monitor, and collect data regarding the operation of the water system. The major facilities that have SCADA capabilities are the water supply sources, pumping stations, and water storage reservoirs. The SCADA system allows for many and varied useful functions. Some of these functions allow operating personnel to better monitor the water supply source flow rates, reservoir levels, turn on or off pumping units, etc. The SCADA system aids in the prevention of water reservoir overflows and increases energy efficiency.

- **Water Conservation Ordinance -** California Water Code Sections 375 et seq. permit public entities that supply water at retail to adopt and enforce a water conservation program. The purpose of this code is to reduce the quantity of water used by the people therein for the purpose of conserving water supplies of such public entity. Rainbow's Board of Directors established a comprehensive water conservation program pursuant to California Water Code Sections 375 et seq., based upon the need to conserve water supplies and to avoid or minimize the effects of any future shortage. A water shortage could exist based upon the occurrence of one or more of the following conditions:

  1. A general water supply shortage due to increased demand or limited supplies (whether caused by drought, natural disaster, or other emergency).

2. Distribution or storage facilities of the Water Authority or other agencies becoming inadequate.

3. A major failure of the supply storage and/or distribution facilities of Metropolitan, the Water Authority, or of Rainbow occurs.

4. Rainbow finds and determines that the conditions prevailing in the San Diego County area requires available water resources be put to maximum beneficial use to the extent to which they are capable. The waste, unreasonable use or unreasonable method of use of water shall be prevented. Conservation of such water shall be encouraged with a view towards the maximum, reasonable, and beneficial use in the interest of the people of Rainbow and for the public welfare.

- **Water Conservation Program** The water conservation program is codified in Ordinance 91-5, as amended, and sets the authority for recognizing an emergency or water shortage conditions and provides for staged, mandatory water conservation implementation.

Section 6 - Existing and Projected Supplies

Rainbow's primary source of potable water is imported through the Water Authority. Rainbow is a member agency of the Water Authority. The Water Authority is a member agency of Metropolitan.

The statutory relationships between the Water Authority and its member agencies, and Metropolitan and its member agencies, respectively, establish the scope of the Rainbow Municipal Water District's entitlements to water from these two agencies.

Rainbow imports 100% percent of its potable water through seven turnouts located on the MWD/Water Authority aqueducts. The Water Authority in turn, currently purchases most of its water from Metropolitan. Due to Rainbow's dependency on these two agencies, this WSAV Report includes information on the existing and projected supplies, supply programs, and related projects of the Water Authority and Metropolitan along with the demands and supplies within Rainbow's service area.

The information and conclusions presented in this report are based upon sources (MWD and SDCWA) outside the control of RMWD; therefore, there is no affirmation regarding the validity of the projections or availability of future water supplies and RMWD takes no responsibility.

6.1 March 2003 Report on Metropolitan's Water Supplies, A Blueprint for Water Reliability

In March 2003, Metropolitan produced a document entitled, *Report on Metropolitan's Water Supplies, A Blueprint for Water Reliability* (March 2003 Report). The objective of the March 2003 Report was to provide the member agencies, retail water utilities, cities, and counties within its service area with water supply information for purposes of developing water supply assessments and written verifications. The March 2003 Report states that the approach to evaluating water supplies and demands is consistent with Metropolitan's 2000 Regional UWMP. As part of this process, Metropolitan also uses SANDAG's regional growth forecast in calculating regional water demands for the Water Authority.

Metropolitan has not yet updated the March 2003 Report and pertinent actions and activities have occurred over the past year that should be documented. To ensure a thorough analysis of the water supplies available to serve the proposed project along with existing and future water demands, supplemental information to the March 2003 Report is included in the Water Authority's 2004 Annual Water Supply Report. (Refer to Section 6.2)

6.2 Water Authority's 2004 Annual Water Supply Report

In June 2004, the Water Authority Board of Directors approved the Water Authority's *2004 Annual Water Supply Report* (Supply Report) for distribution to member agencies, the County of San Diego, and cities within the County. The purpose of the Report is to provide an annual statement regarding the Water Authority's supplies and implementation of Water Authority plans and programs to meet the future water supply requirements of its member agencies. The Supply Report contains documentation on the Water Authority/Imperial Irrigation District Water Conservation and Transfer Agreement, All American Canal and Coachella Canal Lining Projects, and planned seawater desalination facility at the Encina Power Station. In addition, the Supply Report provides documentation on Colorado River supply activities that were not included in Metropolitan's March 2003 Report. The documentation included in the Supply Report was prepared for use by the Water Authority's member agencies in preparation of the water supply assessments and written verifications required under state law. A copy of the report is included in the Appendix.

6.3 Rainbow Municipal Water District

Rainbow's UWMP contains a comparison of projected supply and demands within its existing boundaries through the year 2020. Projected potable water resources to meet demands as planned are primarily supplied with imported water purchased from the Water Authority. Rainbow currently has no local supply of potable water or groundwater resources. Rainbow is currently assessing the possibility of developing groundwater and recycled water supplies through Master Planning

6.3.1 Demonstrating the Availability of Sufficient Supplies and Plans for Acquiring Additional Supplies

Section 5 subdivision 11 of the County Water Authority Act states that the Water Authority "as far as practicable, shall provide each of its member agencies with adequate supplies of water to meet their expanding and increasing needs." The Water Authority provides between 75 to 95 percent of the total supplies used by its 23 member agencies, depending on local weather and supply conditions. Historic imported water deliveries from the Water Authority to Rainbow are shown in the following table.

Table 5 - Historic Imported Water Deliveries

Fiscal Year	Imported Water (AF)
1980-81	34,111
1985-86	29,887
1990-91	30,500
1995-96	22,169
2000-01	26,787

The availability of sufficient imported and regional water supplies to serve existing and planned uses within Rainbow service area is demonstrated in the above discussion on Metropolitan and the Water Authority's water supply reliability. Rainbow currently (2004) takes delivery of over 32,000 AFY of supplies from the Water Authority. This is expected to increase to 39,256 AFY by 2025.

Section 7 – Recycled Water Supplies

Existing Recycled Water Activity - In an ongoing effort to diversify the water demand within its service area, Rainbow is currently proposing the preparation of a Recycled Water Master Plan. This Master Plan will identify potential customers, quantify most likely supply quantities, provide a planning level lay-out of the required facilities and determine planning level cost estimates for the Recycled Water System.

Rainbow's Capital Improvement Program - Rainbow plans, designs, and constructs water system facilities to meet projected ultimate demands placed upon the potable and recycled water systems. In addition, Rainbow forecasts needs and plans for water supply requirements to meet projected demands at ultimate build out. The necessary water facilities are constructed when development activities proceed and require service to achieve adequate cost effective water service.

New water facilities that are required to accommodate the forecasted growth within the entire Rainbow service area are defined and described within Rainbow *Capital Improvement Program* (CIP). As major development plans are formulated and proceed through the land use jurisdictional agency approval processes, Rainbow prepares water system requirements specifically for the proposed development projects. These requirements document, define, and describe all the water system facilities to be constructed to provide an acceptable and adequate level of service to the proposed land uses, as well as the financial responsibility of the facilities required for service.

Project Specific Analysis –The District Water Capital Improvement Program is based on land use simulations that create future demand scenarios on a complete water supply, storage, pumping and distribution model. The model provides a logical basis for determining the sufficiency of the water system to deliver water to existing and future customers. The Project has been analyzed using the model and water can be supplied to the Project with the inclusion of developer funded system improvements.

Potential On-Site and Off-Site improvements to provide water service to the Project have been prepared and presented to the District for review.

Section 8 – Conclusion: Availability of Sufficient Supplies

Rainbow, Metropolitan, and the Water Authority have all developed plans and are implementing projects and programs to ensure that the existing and planned water users within Rainbow's Service Area have an adequate supply. The forecasted water demands are compared with projected supplies within Rainbow's service area and shown in the following table. This demonstrates that with, implementation of the projects discussed in the three agencies planning documents, there will be adequate water supplies to serve the proposed Project development along with existing and other future planned uses.

Table 6 - Rainbow Projected Water Supply and Demand during Normal Year for Period 2005 to 2025 (AFY)

Supply Source	2005	2010	2015	2020	2025
Imported Water	31,117	31,508	33,456	35,976	38,496
Local Groundwater*	0	0	0	0	0
Local Recycled**	0	0	0	0	0
Total Supply	31,117	31,508	33,456	35,976	38,496
Total Demand	31,117	31,508	33,456	35,976	38,496

* Rainbow Valley Groundwater Management Plan is currently being prepared
** Staff has recommended preparation of Recycled Water Master Plan

The normal, single, and multiple dry-year scenarios are based on historical performance of the system and are shown in Table 6. No extraordinary conservation measures, beyond Best Management Practices implementation, are reflected in the demand projections. An adequate supply is further confirmed within Metropolitan's March 2003 Report, within which it states that they will have adequate supplies to meet dry year demands within its service area over the next 20 years.

Table 7 - Rainbow Projected Water Supply and Demand during Normal, Single and Multiple Dry Years (AFY)

	Water Year Type		Multiple Dry Water Years		
Supply Source	Normal 2010	Single Dry 2010	Year 1 2011	Year 2 2012	Year 3 2013
Imported Water	31,508	33,714	34,130	34,547	34,964
Local Groundwater*	0				
Local Recycled**	0				
Total Supply	31,508	33,714	34,130	34,547	34,964
Total Demand	31,508	33,714	34,130	34,547	34,964
Dry increase over normal		7%			
Annual Increase in Demand		389.6 AFY			

This WSAV Report demonstrates and verifies that, with development of the resources identified, there will be sufficient water supplies over a 20-year planning horizon to meet the projected demand of the proposed Project and the existing and other planned development projects within Rainbow.

The information and conclusions presented in this report are based upon sources (MWD and SDCWA) outside the control of RMWD; therefore, there is no affirmation regarding the validity of the projections or availability of future water supplies and RMWD takes no responsibility.

Source Documents

Rainbow Municipal Water District. 2000. Urban Water Management Plan.

San Diego County Water Authority. 2004 Annual Water Supply Report

SANDAG Series 9 Population Forecasts for Rainbow Municipal Water District

Metropolitan Water District. 2004. Integrated Water Resources Plan 2003 Update

TEN PERCENT DESIGN REPORT FOR LIFT STATION

TEN PERCENT DESIGN REPORT
FOR THE
CAMPUS PARK SEWER LIFT STATION

May 12, 2009

Prepared by:
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Job No. 669-011

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CHAPTER 1

INTRODUCTION

The Campus Park Sewer Lift Station is a proposed sewer system improvement within the Campus Park development project. The lift station and force main are part of the infrastructure needed to provide sewer service to this development project. The Campus Park Sewer Lift Station is intended to be a public facility to be owned and operated by the Rainbow Municipal Water District. This report will provide pre-design data for the lift station to ensure that the final design of this facility will conform to the requirements of the development project and the design criteria of the Rainbow Municipal Water District.

Project Location and Description

The Campus Park project is located in the County of San Diego, north of Pala Road (Highway 76) and south of Stewart Canyon Road. The project's western boundary follows the Interstate 15 Freeway. Figure 1-1 presents a vicinity map showing the properties of interest and the proposed location of the Campus Park Sewer Lift Station within the Campus Park Subdivision property.

The Campus Park project proposes on-site construction of a mixed-use community. The development would include a total of 1,076 single- and multi-family homes, professional office uses, as well as parks, a Homeowner's Association (HOA) recreational facility, a Town Center (with retail and support services), and designated open space and biological open space preserves. Table 1-1 presents the proposed development summary for the Campus Park project.

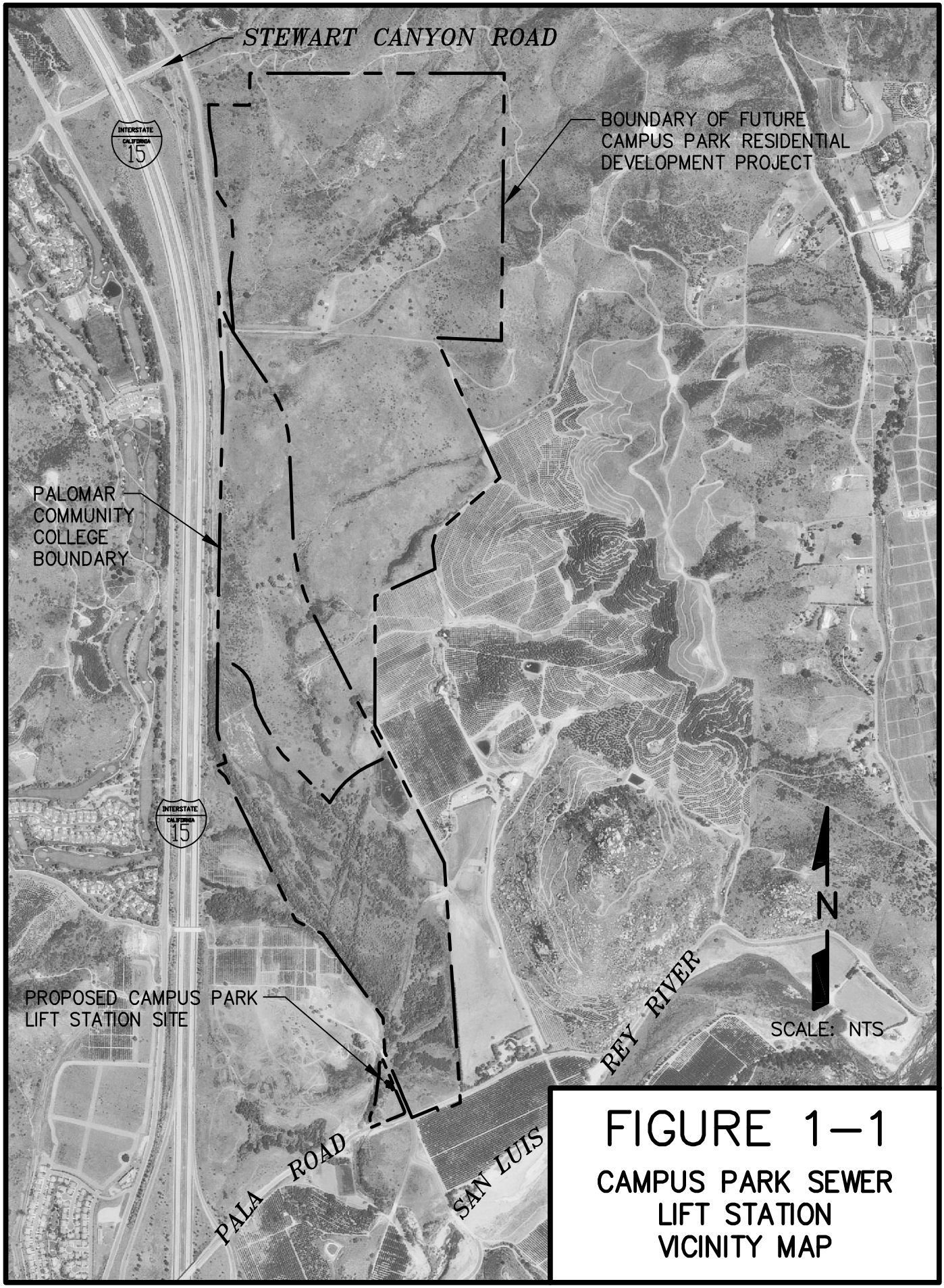


FIGURE 1–1

CAMPUS PARK SEWER LIFT STATION VICINITY MAP

\\PACIFIC\DWG\669011\FIGURE-1-1.DWG 07-26-07 08:08:03 LAYOUT: VICINITY

TABLE 1-1
CAMPUS PARK PROPOSED
DEVELOPMENT PLAN

Land Use	Quantity
Residential Development	
Single Family Residential	521 dwelling units
Multi-Family Residential	555 dwelling units
Commercial Development	
Town Center Commercial	61,200 square feet
Professional Office	157,000 square feet
Parks and Open Space	
Developed Parks	7 parks
Sports Complex	8.5 acres

Adjoining Project

Between the Campus Park project and the Interstate 15 Freeway is the Palomar Community College site which is currently processing site development permits. The Palomar Community College project plans to develop a community college campus including administrative and academic buildings and sports and recreation fields over approximately 80 acres. The project's ultimate college population is projected to be 2,833 full time equivalent students and 100 full time equivalent staff.

Purpose of Study

An analysis of the sewerage needs for the Campus Park development was completed by Dexter Wilson Engineering, Inc. on March 24, 2009 and is titled, "Sewer Service Analysis for the Campus Park Project in the County of San Diego." The contents of the report recommended the construction of an onsite lift station which would serve the Campus Park project as well as the Palomar Community College project and the existing Plant B Sewer Collector, owned by the Rainbow Municipal Water District. The Plant B sewer collector presently discharges to the Plant B lift station southwest of the Campus Park and Palomar Community College sites. Figure 1-2 illustrates the location of these existing facilities relative to the projects.

This report serves as a ten percent design report to establish design criteria and preliminary design information for the proposed Campus Park Sewer Lift Station. The capacity of the lift station will be based on two alternative flow scenarios:

1. The first alternative will address providing sewer pumping capacity for the entire Campus Park project, the Palomar Community College project, and the ultimate projected flows in the Plant B Interceptor.

2. The second alternative will address the existing capacity rights limitation of the Campus Park and Palomar College projects. This scenario will include only 850 EDUs of capacity from the Campus Park project, 100 EDUs of capacity from the Palomar Community College project, as well as the ultimate projected flows to the Plant B Interceptor.

The scope of this report is limited to the facilities within the pump station site. This report will provide a preliminary site layout and equipment layout. The report will include preliminary hydraulic calculations for sizing the pumping equipment and the force main from the pump station. The basic components of the pump station will be discussed to ensure that the design of the station will meet the requirements of the Rainbow Municipal Water District.

FIGURE 1–2

CAMPUS PARK PROJECT EXISTING OFFSITE SEWER SYSTEM

\\PACIFIC\DWG\669011\FIGURE-1-2.DWG 03-18-09 14:37:35 LAYOUT: FIGURE

CHAPTER 2

DESIGN BASIS

This chapter will present the basis upon which the sizing and layout of the proposed sewer lift station is designed.

Design Criteria

The Campus Park Lift Station design will be based on the Rainbow Municipal Water District's *Domestic Water and Sanitary Sewer Construction Manual, August 2006*, Section 2.03.C, Pump Station Design. A copy of this section can be found in Appendix A of this report for reference.

Pump Station Capacity

The Campus Park Sewer Lift Station will be designed to accommodate sewage flows generated by the Campus Park and Palomar Community College projects, as well as flows in the Plant B Interceptor. The average and peak sewage generation flows for the development projects were determined in the previously referenced March 24, 2009 Dexter Wilson Engineering, Inc. report. These calculations are provided in Tables 2-1 and 2-2 below. Note that firm pumping capacity is calculated to be 1.3 times the peak sewer flow to account for wet weather surcharges.

The pumping capacity required for the ultimate flows in the Plant B Interceptor is obtained from Chapter 5 of the *Wastewater Master Plan Update*, May 2006 which addresses ultimate flow projections for Rainbow Municipal Water District. Table 5-2 of the *Wastewater Master Plan Update* indicates a peak wet weather flow pumping capacity requirement of 560 gpm for the Plant B Lift Station. Since all of the Plant B Interceptor flows to the Plant B Lift Station, it is appropriate to use the ultimate

pumping capacity projection for sizing the Campus Park Lift Station. To convert this flow to average flow, we estimated the peaking factor to be 3.5 and checked the estimate based on the peaking factor equation per the District Guidelines. Thus, by back-calculating, we determined the average flow equivalent for the Plant B Interceptor ultimate peak flow to be 160 gpm average.

The following two tables present the lift station pumping capacities for each of the two alternative sewer service scenarios.

TABLE 2-1
ALTERNATIVE 1
CAMPUS PARK LIFT STATION PUMPING CAPACITY

Service Area	EDUs	Average Flow
Campus Park	1,178.1	294,525 gpd
		204.5 gpm
Palomar College	100.0	25,000 gpd
		17.4 gpm
Plant B Interceptor	921.6	230,400
		160 gpm
TOTAL	**2,199.7**	**381.9 gpm**
Population	5,499.3	
Peak Factor	3.08	
Total Peak Flow	1,176 gpm	
TOTAL FIRM PUMPING CAPACITY	**1,529 gpm** **Use 1,530 gpm**	

TABLE 2-2 ALTERNATIVE 2 CAMPUS PARK LIFT STATION PUMPING CAPACITY		
Service Area	**EDUs**	**Average Flow**
Campus Park	850	212,500 gpd
		147.6 gpm
Palomar College	100.0	25,000 gpd
		17.4 gpm
Plant B Interceptor	921.6	230,400
		160 gpm
TOTAL	**1,871.6**	**325.0 gpm**
Population	4,679.0	
Peak Factor	3.27	
Total Peak Flow	1,063 gpm	
TOTAL FIRM PUMPING CAPACITY	**1,382 gpm Use 1,390 gpm**	

CHAPTER 3

PUMP STATION HYDRAULICS

The total dynamic head which the pumps for the Campus Park Sewer Lift Station will have to develop will be based upon the static head conditions for the lift station as well as the friction and minor losses in the force main and the pump header system. Preliminary calculations to determine the total dynamic head for the station are included in Appendix B. A more detailed discussion of the calculations follows in the balance of this chapter.

Lift Station Pumping Capacity

Tables 2-1 and 2-2 summarized the calculations used to determine the lift station pumping capacity for each of the two sewer service alternatives. Briefly, Alternative 1 incorporates all of the proposed Campus Park development project plus the Palomar College site and the ultimate flows from the Plant B Interceptor. Alternative 2 considers only the 850 EDUs of sewer capacity which Campus Park currently owns plus the 100 EDUs of sewer capacity for the Palomar College site and the ultimate flows from the Plant B Interceptor.

The pumping capacities vary by 147 gpm as summarized below:

Alternative 1 Pumping Capacity	1,530 gpm
Alternative 2 Pumping Capacity	1,390 gpm

Operation of Multiple Pumps. For a lift station of this pumping capacity, multiple pumps will be employed to deliver the total pump flow. For the Campus Park Sewer Lift Station, we anticipate a total of two pumps together will provide the lift station pumping capacity. Thus, there will be occasions where a single pump will be operating by itself. The sewer lift station hydraulic calculations in Appendix B provide an

estimate of the pumping capacity of a single pump for both alternative lift station scenarios. The summary of pumping capacities is presented below:

Alternative 1:	Two Pumps 1,530 gpm	One Pump 1,070 gpm
Alternative 2:	Two Pumps 1,390 gpm	One Pump 970 gpm

Force Main Sizing and Discharge Conditions

The Campus Park Sewer Lift Station force main will discharge through the existing 12-inch sewer force main in Pala Road (Highway 76). Approximately 1,080 feet of new force main will be constructed from the Campus Park Lift Station to the existing force main. It is recommended that the new length of force main be 12-inch diameter to accommodate the Campus Park, Palomar Community College, and Plant B Interceptor service areas.

The existing force main was constructed in 1988 and has never been used because the site development project was never constructed. The force main begins as a 12-inch pipe approximately 2,200 feet east of the east side of the Pala Road bridge over the Interstate 15 Freeway. Through the bridge over the freeway the force main is a 10-inch pipe; the 10-inch pipe extends approximately 200 feet beyond the bridge on the west side where it connects to the existing 21-inch gravity sewer line in Pala Road (Highway 76). The discharge elevation for the force main is 295.2 feet with its highest point at 300.0 feet. Figure 1-2 provides the locations of the existing and proposed force main sections.

Force main velocities are critical to maintaining movement of sewage solids through the force main. Table 3-1 below presents the expected force main velocities through the existing 10-inch pipe as well as the proposed and existing 12-inch piping. The velocities are calculated for single and dual pump operation for each of the two alternative pumping station capacities. Minimum expected force main velocity will be 2.8 fps under Alternative 2 flows with a single pump running.

TABLE 3-1 FORCE MAIN VELOCITIES		
Lift Station Capacity	**10" Force Main**	**12" Force Main**
Alternative 1 – Two Pumps Operating 1,530 gpm	6.3	4.3
Alternative 1 – One Pump Operating 1,070 gpm	4.4	3.0
Alternative 2 – Two Pumps Operating 1,390 gpm	5.7	3.9
Alternative 2 – One Pump Operating 970 gpm	4.0	2.8

Pumping Head Condition

The Campus Park Sewer Lift Station is proposed to be located within the Campus Park development in the southwest corner of the property. The finish grade elevation at the pump station is expected to be approximately 270 feet. The influent gravity sewer to the lift station will have an invert elevation of 245 feet, with a low water level of approximately 240 feet. With the high point of the force main at an elevation of 300.0 feet, the maximum static head for the pumps is about 60 feet.

Appendix B contains preliminary hydraulic calculations using a new 12-inch force main from the lift station to the existing 12-inch and 10-inch force main piping in Pala Road and across the Interstate 15 Freeway bridge. The calculations have been prepared for both alternative lift station flow scenarios. Calculations are prepared using a Hazen-Williams 'C' value of 120 for the maximum head condition and 150 for the minimum head condition.

The preliminary rating point for the sewage pumps is based on having three pumps in the station; two pumps are duty and the third is standby. The preliminary rating points are presented below.

Alternative 1

Pump rating point: 765 gpm at 95 feet TDH; Motor horsepower: 40 hp

Alternative 2

Pump rating point: 700 gpm at 89 feet TDH; Motor horsepower: 30 hp

Dual Force Main System

The Campus Park Sewer Lift Station is proposed to have two sewage force mains. One force main, as discussed previously, will deliver sewage to the west side of Interstate 15 in Pala Road via the existing 10" and 12" force main constructed in Pala Road. The second force main is intended to deliver sewage to a future sewage treatment plant in the vicinity of the Campus Park project. This treatment plant is envisioned to provide sewer service to the Pardee Homes' Meadowood project to the east of Campus Park, or it could be constructed by the Campus Park project to provide sewer capacity beyond the 850 EDUs currently owned by Campus Park.

The proposed Campus Park Sewer Lift Station includes a flow meter after the valve vault which would totalize the flow pumped to the west. When the daily flow volume equivalent to 850 EDUs of Campus Park was attained, the flow meter would signal the motor operated valves on the two force mains to switch so that any additional sewage pumped that day would not go to the west but be delivered to the alternative sewer disposal system.

Since the alternative sewer disposal system is not clearly defined at this time as to location, the second force main hydraulic calculations cannot be completed. It is anticipated that the pumping head conditions for the second force main will be lower than pumping to the west; therefore, the second force main will have a pinch valve adjusted so that the discharge head of the force main system will match that of the

force main to the west. In this way, the same pumping equipment will be used for pumping sewage in either force main.

CHAPTER 4

PUMP STATION CONFIGURATION AND FEATURES

This chapter will provide a discussion of the equipment and features proposed for the Campus Park Sewage Lift Station. Included within this chapter is a preliminary site layout showing the proposed configuration of the pump station's components and a mechanical section of the pumps and piping.

Submersible Pump Station

This project proposes to build a triplex submersible lift station to accommodate the Campus Park, Palomar Community College, and Plant B Interceptor service areas. Three submersible pumping units will be installed, with any two pumps together capable of handling the design pumping capacity of the lift station. The lift station shall consist of a pre-cast concrete rectangular wet well sized to accommodate all three pumping units. The submersible pumps shall discharge through a below grade valve vault and discharge header system connected to the new section of 12-inch force main.

Pump Selection

The preliminary hydraulic calculations presented in Appendix B provide a pump curve for a candidate pump selection. We propose to use a Yeomans (Chicago Pump), Fairbanks Morse, or equivalent, 2-vane impeller, 3-inch solids handling, centrifugal pump with a submersible, explosion-proof, 1,750 rpm motor. Preliminary calculations result in a required pump motor horsepower of 40 hp for the Alternative 1 lift station and 30 horsepower for the Alternative 2 lift station.

Campus Park Lift Station Site

The Campus Park Sewage Lift Station site is located within the Campus Park development project near the intersection of Pankey Road and Pala Road (Highway 76). Figure 4-1 presents a site plan for the proposed sewage lift station.

Access to the lift station site will be from Pankey Road. The current site plan, shown in Figure 4-1, allows for a 20-foot wide access driveway into the fenced pump station site. In addition, a second access point is provided from the off-street parking lot to the west of the lift station site. Finish grade of the pump station site will be approximately 270 feet elevation.

There are three structures proposed for the lift station: 1) the lift station wet well for influent sewage and the three submersible pumping units; 2) emergency storage to accommodate 6 hours of average daily sewage flow; and 3) the valve and flow meter vaults. The emergency power generator, the chemical feed/odor control system, and the motor control center are not planned to be enclosed in a building; however, the generator will be provided with a weather-proof, sound attenuated enclosure.

Wet Well. The pump station wet well is proposed to be a 10-foot by 14-foot pre-cast concrete structure. It is anticipated to be 33 feet deep with the top of the wet well set at finish grade. An aluminum double-leaf hatch in the wet well top slab will provide access into the wet well; however no ladder or stairs will be built in the wet well. The interior of the wet well shall be polyurethane lined. Figure 4-2 shows the general layout of the wet well.

Emergency Storage. Emergency storage will be provided on-site to accommodate 6 hours of average daily flow. For the Campus Park, Palomar Community College, and Plant B Interceptor service areas under Alternative 1 flows, approximately 137,484 gallons (18,380 ft^3) of storage is required. It is proposed to supply this storage in an arrangement of 8-foot x 14-foot (LxW) pre-cast concrete vaults below grade. To achieve the required storage volume, the vaults would have a liquid holding depth of 18.3 feet.

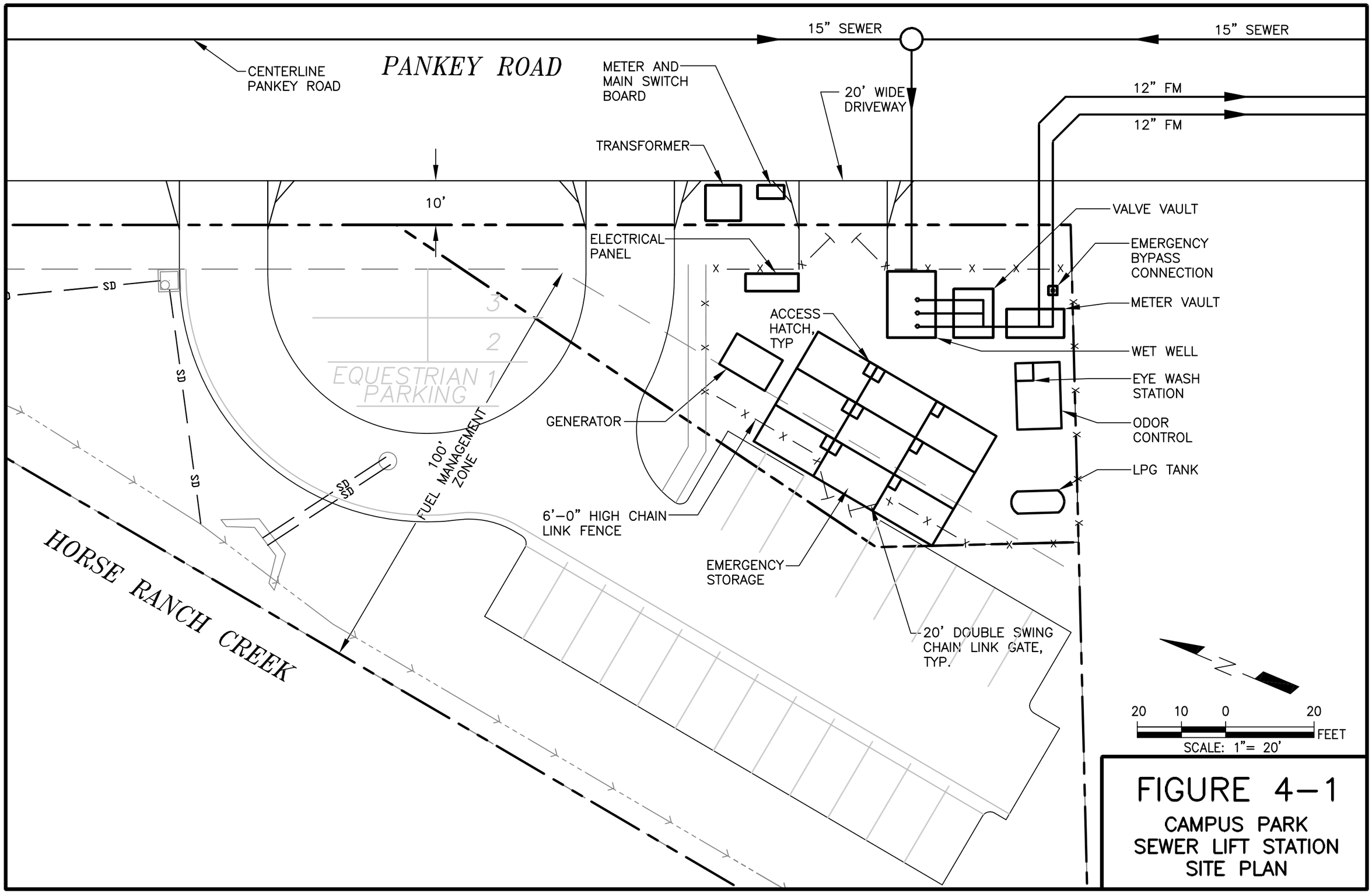
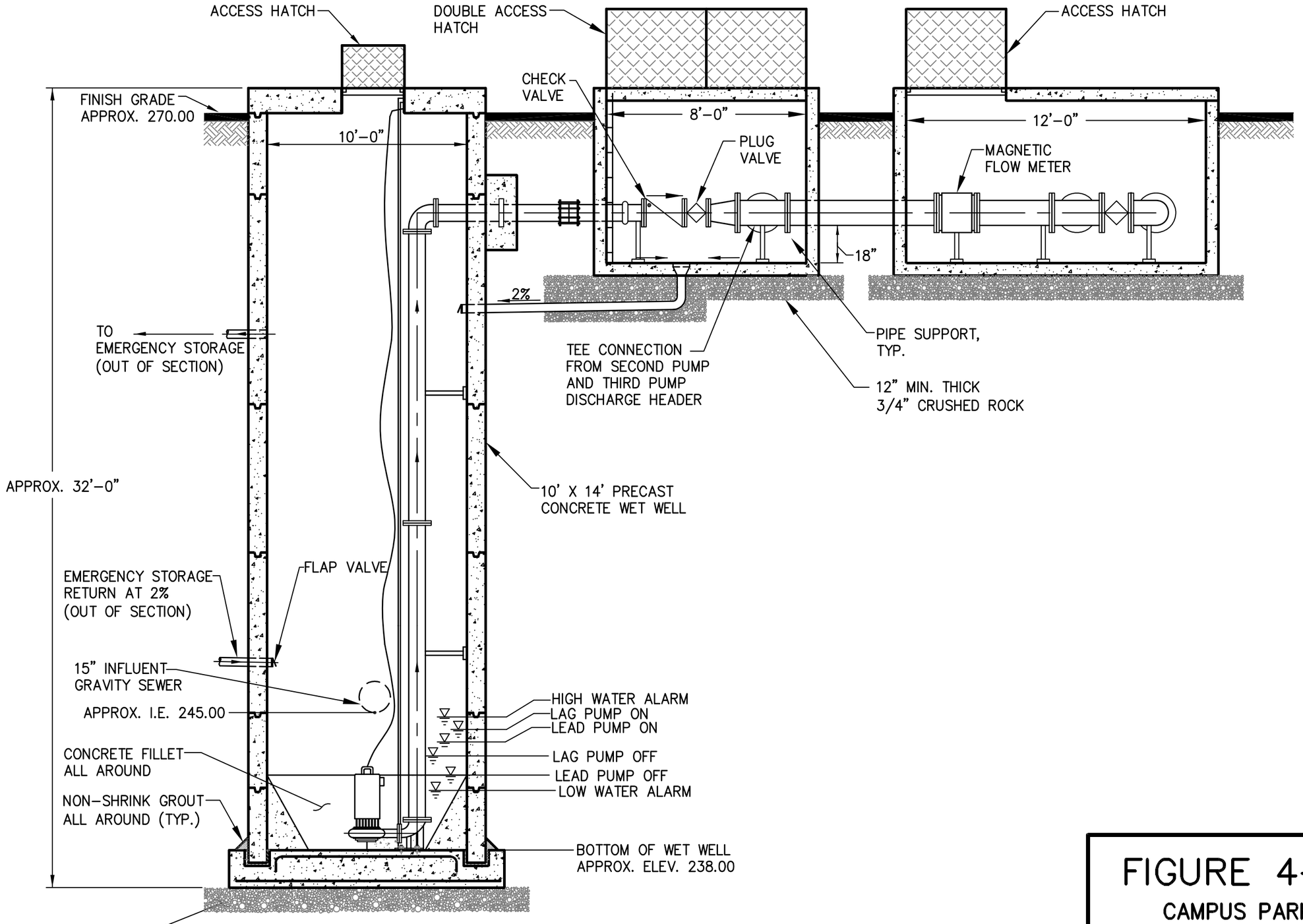


FIGURE 4-1

CAMPUS PARK SEWER LIFT STATION SITE PLAN



WET WELL AND VALVE VAULT SECTION

SCALE: NTS

FIGURE 4-2

CAMPUS PARK
SEWER LIFT STATION
MECHANICAL SECTION

\\PACIFIC\DWG\669011\FIGURE 4-2.DWG 05-12-09 15:31:03 LAYOUT: SECTION

The emergency storage vaults are proposed to be buried three feet so that only the access shafts would be at grade. The access shafts for the vaults would be equipped with traffic rated hatches. The emergency storage volume will be directly connected to the wet well. Emergency storage will fill and empty by gravity depending on the liquid level of the wet well.

Valve Vault. The valve vault is proposed to be an 8-foot x 10-foot x 6-foot (LxWxH) pre-cast concrete structure. An aluminum double-leaf hatch in the top slab will allow access to the vault; this hatch would be located a few inches above finish grade. The valve vault will contain the pump discharge check valves and plug valves, one set for each pump.

Meter Vault. Outside the Valve Vault, the discharge pipe will enter the Meter Vault which will include a magnetic flow meter followed by motor operated plug valves to control which force main is receiving the pumped flow. Only one force main is expected to be active at any time. As shown in Figure 4-1, an above grade emergency bypass connection is proposed to be included at the station downstream of the Meter Vault. This will provide flexibility in the event that the pumps or force main need to be bypassed.

Standby Engine/Generator

A liquefied petroleum gas (LPG) engine driven emergency power generator is proposed in the design of the Campus Park Sewage Lift Station to provide a backup power source. The engine/generator will be sized to run two pumps in addition to all auxiliary electrical and mechanical systems. The preliminary size of the engine/generator unit is 80 kW.

The LPG engine/generator will be coupled with an LPG tank on the lift station site to provide for operating the engine/generator at full load for 12 hours. An automatic transfer switch will allow automatic starting of the engine/generator set upon loss of

commercial power. Upon restoration of commercial power, the generator set will automatically be disconnected and the pump station will revert back to commercial power supply. The automatic transfer switch will be a part of the Motor Control Center.

Electrical Systems

Electrical power for the pump station will be provided by means of an onsite transformer tied to the backbone SDG&E power system for the Campus Park project. The transformer power will be 480 volt, three phase, 4 wire, 60 hertz.

The electrical panel will include the meter and main switchboard, the main control panel, the motor control center, the subpanel for single phase power distribution, a telemetry equipment cabinet, the automatic transfer switch, and the telephone service backboard. The equipment will be in a NEMA 4X lockable outdoor enclosure with panel doors for access to the equipment.

Site Lighting. The lift station compound will be designed with adequate lighting. Exterior lights will be pole mounted and located on the site to provide sufficient visibility of all equipment and facilities. Unless the District would like some type of security lighting, it is intended that the exterior lights would be controlled by a switch near the gate to the lift station.

Pump Control. Pumps will be controlled using a PLC with wet well level inputs from a submersible transducer. The PLC will control pump lead/lag starts, alternation, and will also generate alarm signals. Backup float switches will be included for high-high level and low-low level in the wet well to provide backup control of the pumps in the event of the PLC level system failure.

Telemetry

Telemetry to be provided at the lift station will be a radio system compatible with the current system being used by the Rainbow Municipal Water District. Lift station status and alarm conditions will be telemetered back to the District's Operations Center and will be compatible with the District's Supervisory Control And Data Acquisition (SCADA) System. A detailed list of status and alarm contacts will be provided to the District for review during the design of the instrumentation system for the lift station.

Piping and Valving

Pipe and fittings within the lift station wet well and through the valve vault shall be ductile iron minimum Class 250. Ductile iron pipe and fitting shall be liquid epoxy coated and lined. Buried force main piping shall be minimum Class 150, C-900 PVC. Shut-off valves on any piping including the force main shall be the eccentric plug type. Both pumps shall have a discharge valve, and a discharge swing-type check valve with external-spring loaded arm.

A magnetic flow meter is proposed to be provided on the common discharge piping within the lift station valve vault.

Pressure gauges will be provided on the discharge piping of each pump. The pressure gauges will be located in the valve vault. Additionally, each pump shall have an hour meter.

Downstream of the valve vault an emergency connection to the force main will be provided for by-pass pumping. The blind flanged, vertical tee emergency connection shall be located 30" above grade and could be utilized in two ways. First, if the force main is out of service, the sewage pumps in the station could pump through a temporary force main piping. Second, if the sewage pumps are out of service, temporary pumps could be connected to the force main to continue pumping sewage while the permanent pumps are being repaired.

Odor Control System

To control odors at the lift station and at the discharge end of the force main, we are recommending that a chemical addition system be included in the design of the pump station. It is proposed that Bioxide or other such chemical be added to the wet well to control odors. The required chemical dosage rate will vary based on the amount of influent flow to the station, but our initial sizing indicates that a 1,000 gallon chemical storage tank will be adequate. A chemical storage tank of this size would have to be refilled approximately every two to three months during ultimate projected flows to the station. The proposed location of the chemical storage tank is shown on Figure 4-1.

Surge Control

A detailed surge control analysis will be performed on this lift station force main system during the final design of the facility. The recommendations of the analysis will be incorporated into the project design. The recommendations may include such components as a surge relief tank (pressure vessel), check valve closure speed controls, or a surge relief valve which would discharge into the wet well.

Once the surge analysis is completed, we will review with the District the results of the analysis and the proposed mitigation measures that we recommend to include in the design of the lift station.

APPENDIX A

RAINBOW MUNICIPAL WATER DISTRICT'S DOMESTIC WATER AND SANITARY SEWER CONSTRUCTION MANUAL, AUGUST 2006

Section 2.03.C - Pump Station Design

B. SEWER FORCE MAINS

1. Force mains may not be constructed in the same trench as sewers. Minimum separations from waterlines shall be those specified for sewers. Insofar as practicable, force mains shall be laid at continuously ascending grades without intermediate high points or low points.

2. Minimum cover for force mains shall be 4 feet from finish grade to top of pipe, plus additional vertical clearance to locate sewage-type (long-body) combination air release and air and vacuum release valves and appurtenances below ground. Top of pipe profile shall be shown on the profile.

3. Size of force mains must be considered in conjunction with characteristics of the pumping equipment to be provided. In general, the design rates of flow shall be not less than 3 feet per second nor higher than 8 feet per second. Every attempt should be made to limit the maximum retention time in force mains to six (6) hours.

4. Unless otherwise approved or specified, force mains shall be minimum Class 200, PVC C-900 or C-905. Other materials shall only be as approved by the District Engineer.

5. Low points in force mains shall be fitted with approved blow-offs (drains). High points shall have approved appurtenances for air release and air and vacuum release.

6. Thrust restraint calculation shall be submitted to the District Engineer for review and approval. Restraint may be provided either by restrained joint pipe or by thrust blocks.

7. Show all minimum clearances of other underground utilities in both plan and profile per State Department of Health Services "Criteria For The Separation Of Water Mains And Sanitary Sewers."

C. PUMP STATION DESIGN

Public and private wastewater pump stations shall be avoided whenever possible. Specific written agreement from the District Engineer for the use of a pump station is required prior to approval of grading or improvement plans. If a pump station is approved, the design engineer shall submit a pump station basis of design report to the District Engineer for review and approval. The design report shall address, but not be limited to, the following items. After approval of the basis of design report, subsequent plan and specification packages shall be submitted to the District Engineer for review and approval.

Pump station plans shall include pump curves, specifications, details, pump head, pump horsepower, pump capacity, electrical layout, control system layout-out, and schematics.

Sewer pump stations should be designed based on the projected peak wet weather influent flow.

Each pump station shall be provided with two (2) independent sources of power. This could be accomplished by providing an on-site generator with an on-site fuel source in addition to

the electrical supply. The generator shall be located in a building or under cover and shall meet all city and environmental noise limitation requirements.

Every sewer pump station shall be designed in accordance with the following criteria:

1. Pumps

   a. The minimum pump cycle time shall be in accordance with the pump and motor manufacturers' requirements. Note that larger motors require longer times between starts. Also, see other wet well sizing requirements related to minimum pump cycle time.

   b. The minimum number of pumps per station shall be one (1) duty pump and one (1) standby pump of the same size.

   c. The minimum non-clog sewage pump size shall be 4-inches with the capability to pass a 3-inch sphere. Where smaller pumps (capacity) are required, grinder type pumps shall be used.

   d. Pump/system curve data shall include the following: system curve, design operating point, required net positive suction head (NPSH), hydraulic efficiency, Hp requirements, RPM, and other operating conditions required for each pump.

   e. The most efficient pump performance shall be at the design Total Dynamic Head (TDH). Avoid pumps with "flat" pump curves where a small change in TDH will result in a large change in pump flow.

   f. A factory certified pump test curve for the actual pump units to be installed at the station shall be required.

   g. The specified operating point shall be near the maximum efficiency point on the pump curve and within the manufacturer's recommended limits for radial thrust and vibration. Select a pump curve where the operating point will near the center of the pump recommended operating range. Pump equipment shall be dynamically balanced to prevent vibration. No surge cavitation or vibration shall be allowed within the limits of the stable operating range indicated on the pump curve.

   h. If pumps have a water lubricated packing system, it shall be constant pressure type, and shall exceed the pressure of the pump. Water shall be supplied to the packing water system through an air gap tank and repressurization system installed in a location that is unconfined and above grade.

   i. Edges on pump bases shall be chamfered.

   j. For suction lift type pumps, TDH calculation must include the static suction lift elevation.

   k. Self priming pumps may be allowed for above ground stations with a maximum suction lift of 10 feet.

   l. Dry pit submersible pumps shall be used in a wet well/dry well configuration to avoid extended shafting and to protect the pumps from accidental flooding of the dry pit.

m. Submersible pumps/motors, with stainless steel rail system, may be considered for direct installation in a wet well at the discretion and approval of the District Engineer.

2. Piping and Appurtenances

a. Pump isolation valves (suction and discharge) shall be plug valves with suitable operators per manufacturer's recommendations.

b. Check valves shall be between pump and discharge plug valve, with external spring-loaded arm.

c. Discharge line and manifold shall be supported and braced. Install sleeve couplings and/or flange coupling adaptors restrained by tie rods on the discharge piping for ease of removal of piping. These fittings will also prevent uneven tightening of flange faces.

d. Sleeves shall be used for wall penetrations for pump suction lines and manifold discharge line.

e. In manifolds, "Wyes" are required and shall be the same size as the manifold. Wyes shall be installed for horizontal side entry. Vertical entry shall not be allowed.

f. Potable water services (for wash-down) shall not be smaller than 1-inch, and shall have an approved backflow prevention device. Wash down hose bibbs shall not be located in confined or below grade locations.

g. On suction and discharge piping connected to each pump and on the discharge manifold horizontal and vertical runs, install a flexible coupling adaptor with tie rod thrust restraint to absorb vibrations and prevent stress in the pipe, and to allow minor adjustments in piping installations during construction between fixed well flanges. Piping supports under the suction and discharge lines shall be provided.

h. Pipe joints must be restrained. The following types of joints are acceptable: flanged, dresser type coupling restrained by tie rods, mechanical joint with set bolt retainer gland.

3. Controls

a. Each pump shall have a hour-meter, capable of reading 1/10th hour.

b. Pumps shall operate in a duty/standby mode, with alternators to switch pump starts after each pumping cycle.

c. Where practical, provide variable frequency drives (VFD) with system by-pass and controls.

d. All pump stations shall be equipped with District approved instrumentation and telemetry, which shall be compatible with the District's Supervisory Control And Data Acquisition (SCADA) System.

e. All electrical wiring, fixtures and equipment shall conform to all safety codes.

f. Pump control shall be via a Miltronics ultrasonic level sensing and pump control system with float back-up/for emergency pump start and stop.

4. Alarms

a. Dry well shall have a "flooded" alarm.

b. Wet well shall have a high level and low level alarms independent from the pump controls.

c. Instrumentation and alarms shall be telemetered to District offices.

5. Ventilation

a. Ventilation requirements shall conform to current Cal-OSHA (confined space regulations) and NFPA 820.

6. Drywell

a. All interior concrete surfaces shall be coated with a District approved sealer. All exterior buried walls and roof shall be waterproofed.

b. Provide sump and sump pumps to convey nuisance water out of dry well.

c. All exposed welds shall be coated with non-corrosive coatings.

d. All equipment shall have adequate clearance to perform maintenance and repair work.

e. Guards shall be installed around all moving parts of equipment as required by safety codes.

f. Station shall have guard railings around floor openings which comply with required safety codes and are made of non-corrosive materials.

g. Guard rails shall have toeboards with ¼ inch floor clearance made of non-corrosive materials.

h. Openings in guard rails shall have two chains with snap hooks and eyes made of non-corrosive materials.

i. Floor gratings shall be made of non-corrosive materials.

j. Safety warning signs shall be installed on all hazardous equipment.

k. Lifting eyes (non-corrosive materials) shall be installed above equipment and openings.

l. All concrete floors shall be treated with an approved sealant.

m. All outside doors and frames shall be corrosion and vandal resistant.

7. Wetwell

a. Every pump station shall be provided with emergency storage. The minimum storage volume shall be equal to six (6) hours of average daily flow, unless otherwise approved by District Engineer. The volume of

emergency storage may be adjusted based on site specific conditions and proximity of sensitive receiving areas.

b. The distance between the wet well floor and the turned down bell mouth suction inlet of diameter "D" shall be a maximum of D/2 and a minimum of D/3.

c. Wet well level shall readout in "inches of water."

d. Wet well walls and ceiling shall be PVC lined with T-lock, as manufactured by Ameron Pipe.

e. Wet well floor shall be sloped toward the suction piping at 1/8 inch per foot.

f. Inlet into the wet well shall be above the high water operating level in order to allow for the free flow of the gases into the wet well.

g. Pump stations receiving flow from trunk sewers (18-inches or larger) shall have barscreens.

h. Wet wells shall be designed to allow for the maintenance of wet well.

i. The wet well shall be as small as possible to prevent septic action from taking place during periods of very low flow. However, the wet well must be large enough to provide at least 5 minutes pump running time at low flow to prevent overheating of the electric motor and controls. Designer shall provide written minimum running time confirmation and recommendation from the specified pump manufacturer for the specific application. Provide at least one (1) 36-inch diameter access manhole cover over wet well. See Standard Drawing S-7. Do not provide steps or ladder for access into the wet well.

j. Wet well volume to be calculated as follow:

$Q_{peak} = (Q_{avg}$ X peak factor)

$Q_{design} = Q_{peak}$

Q_{low} = average flow/peak factor

Min Wet well operating volume = $(Q_{design}-Q_{low})$ X 5 Minutes

Depth of wet well = wet well volume/wet well area = (high level - low level)

Wet well operating volume = volume between pump start and pump stop levels

k. The exterior surface of wet wells and dry wells shall be adequately water proofed to prevent intrusion of ground water.

l. Provide facilities for odor control. The odor control facilities shall be approved by the District Engineer.

8. Other Items

Prior to finalizing design, the Applicant's Engineer shall provide one (1) Operations and Maintenance manual to the District Engineer for review and approval. Three (3) copies of Operations and Maintenance manuals shall be provided with the final design.

APPENDIX B

PRELIMINARY HYDRAULIC CALCULATIONS

Campus Park Sewer Lift Station Alternatives 1 and 2

WET WELL VOLUME CALCULATION

Q(design) = 1,529 gpm

WET WELL OPERATING VOLUME DETERMINATION

$$t = \frac{4V}{Q}$$

V = Wet well operational volume
t = Pump cycle time
Q = Q(design)=Q(peak)

Approximate motor hp is 30, so use 6 starts per hour
Therefore, cycle time, t, = 10 min

and V = 3822.5 gal
= 511.0 ft^3

Estimate wet well to be 10' x 14', therefore

Operational depth in wet well = 3.65 feet

WET WELL SET POINT DETERMINATION

Lift Station pad elevation = 270.00 ft

Invert elevation = 245.00 ft

HWL alarm = 6 inches below sewer invert
= 244.50 ft

Pump "on" elevation = 6 inches below HWL alarm
= 244.00 ft

Operational depth = 3.65 ft
Pump "off" = Pump "on" - operational volume
= 240.35 ft

LWL alarm = 6 inches below Pump "off"
= 239.85 ft

Minimum pump submergence
= 2.50 ft

Wet well invert = LWL - minimum submergence
= 237.35 ft

Overall wet well depth = 32.65 ft

DESIGN FLOWRATE

Lift Station Capacity

Q(design) = 1,529 gpm

Force Main Velocity Comparison			
D, in	8	10	12
v, fps	9.8	6.2	4.3

*** Use 12" Force Main where new pipe must be constructed.

HYDRAULIC CALCULATIONS

STATIC HEAD - H(stat)

Minimum Static Head = Force Main High Point - Pump "on" elevation
H(stat,min) = 300 - 244.00 ft
H(stat,min) = 56.00 ft

Maximum Static Head = Force Main High Point - Pump "off" elevation
H(stat,max) = 300 - 240.35 ft
H(stat,max) = 59.65 ft

FRICTION LOSSES IN FORCE MAIN - Hf

Hazen-Williams Formula

$$H_f = \frac{10.44 * \left(\frac{Q}{C}\right)^{1.852} * L}{D^{4.8655}}$$

Proposed Force Main

H(f) = friction losses in ft
Q = 1,529 gpm
C = 120 for design
L = 1080 ft
D = 12.00 in
Hf = 7.05 ft

Existing 12-inch Force Main

H(f) = friction losses in ft
Q = 1,529 gpm
C = 120 for design
L = 2233 ft
D = 12.00 in
Hf = 14.58 ft

Alt. 1 2 of 9

Existing 10-inch Force Main

H(f) = friction losses in ft
Q = 1,529 gpm
C = 120 for design
L = 641.82 ft
D = 10.00 in
Hf = 10.17 ft

Total, Hf = 31.80 ft

MINOR LOSSES IN FORCE MAIN- Hm

$$H_m = \sum K \frac{V^2}{2g}$$

H(m) = minor losses, ft
$\sum K$ = sum of minor loss coefficients
g = gravitational constant
= 32.17 fps^2

Proposed Force Main v, fps = 4.3

12 in

Minor loss coefficients

Description	Quantity	K-value	K-value,total
90 degree bend	6	0.3	1.8
45 degree bend	1	0.2	0.2
Tee-thru, flanged	2	0.3	0.6
Plug valve	1	1.0	1.0
Tee-branch,flanged	1	0.8	0.8
Wye	1	0.5	0.5
Check valve	1	2.5	2.5
Meter	1	1.5	1.5
Exit Loss	0	1.0	0.0

$\sum K$ = 8.9
Hm= 2.59 ft

Existing 12-inch Force Main v, fps = 4.3

Minor loss coefficients

Description	Quantity	K-value	K-value,total
90 degree bend	0	0.3	0.0
45 degree bend	3	0.2	0.6
Tee-thru, flanged	0	0.3	0.0
Plug valve	0	1.0	0.0
Tee-branch,flanged	0	0.8	0.0
Wye	0	0.5	0.0
Check valve	0	2.5	0.0
Meter	0	1.5	0.0
Exit Loss	0	1.0	0.0

$\sum K$ = 0.6
Hm= 0.18 ft

Alt.1 3 of 9

Existing 10-inch Force Main v, fps = 6.2

Minor loss coefficients

Description	Quantity	K-value	K-value,total
90 degree bend	0	0.3	0.0
45 degree bend	0	0.2	0.0
Tee-thru, flanged	0	0.3	0.0
Plug valve	0	1.0	0.0
Tee-branch,flanged	0	0.8	0.0
Wye	0	0.5	0.0
Check valve	0	2.5	0.0
Meter	0	1.5	0.0
Exit Loss	1	1.0	1.0

$\sum K$ = 1.0

Hm= 0.61 ft

Total, Hm = 3.37

DESIGN TOTAL DYNAMIC HEAD, TDH

TDH = SUM OF ALL LOSSES
= H(stat, max) + Hf + Hm
= 94.83 ft

PUMP DESIGN PARAMETERS

Q = 1,529 gpm
TDH = 95 ft

HYDRAULIC CALCULATIONS

MAXIMUM CONDITION

STATIC HEAD = 59.34

12" PVC NEW DISCHARGE PIPING

DIAMETER, INCHES	12
DIAMETER, FEET	1.00
LENGTH, FEET	1080
HW C-VALUE	120
MINOR LOSS K	8.90

FLOW GPM	VELOC. FPS	MINOR LOSSES	FRICTION LOSSES	TOTAL DYNAMIC LOSSES
0	0.00	0.00	0.00	0.00
100	0.28	0.01	0.05	0.06
200	0.57	0.04	0.16	0.21
300	0.85	0.10	0.34	0.44
400	1.13	0.18	0.59	0.77
500	1.42	0.28	0.89	1.17
600	1.70	0.40	1.24	1.64
700	1.99	0.55	1.65	2.20
800	2.27	0.71	2.12	2.83
900	2.55	0.90	2.63	3.53
1000	2.84	1.11	3.20	4.31
1100	3.12	1.35	3.81	5.16
1200	3.40	1.60	4.48	6.08
1300	3.69	1.88	5.20	7.08
1400	3.97	2.18	5.96	8.14
1500	4.26	2.50	6.77	9.28
1600	4.54	2.85	7.63	10.48
1700	4.82	3.22	8.54	11.75
1800	5.11	3.61	9.49	13.09
1900	5.39	4.02	10.49	14.50
2000	5.67	4.45	11.53	15.98
2100	5.96	4.91	12.62	17.53
2200	6.24	5.39	13.75	19.14
2300	6.53	5.89	14.93	20.82
2400	6.81	6.41	16.15	22.57
2500	7.09	6.96	17.42	24.38
2600	7.38	7.53	18.73	26.26

12" PVC EXISTING FORCE MAIN PIPING

DIAMETER, INCHES	12
DIAMETER, FEET	1.00
LENGTH, FEET	2233
HW C-VALUE	120
MINOR LOSS K	0.60

FLOW GPM	VELOC. FPS	MINOR LOSSES	FRICTION LOSSES	TOTAL DYNAMIC LOSSES
0	0.00	0.00	0.00	0.00
100	0.28	0.00	0.09	0.09
200	0.57	0.00	0.34	0.34
300	0.85	0.01	0.71	0.72
400	1.13	0.01	1.21	1.23
500	1.42	0.02	1.83	1.85
600	1.70	0.03	2.57	2.60
700	1.99	0.04	3.42	3.45
800	2.27	0.05	4.38	4.42
900	2.55	0.06	5.44	5.50
1000	2.84	0.08	6.61	6.69
1100	3.12	0.09	7.89	7.98
1200	3.40	0.11	9.26	9.37
1300	3.69	0.13	10.74	10.87
1400	3.97	0.15	12.32	12.47
1500	4.26	0.17	14.00	14.17
1600	4.54	0.19	15.78	15.97
1700	4.82	0.22	17.65	17.86
1800	5.11	0.24	19.62	19.86
1900	5.39	0.27	21.68	21.95
2000	5.67	0.30	23.84	24.14
2100	5.96	0.33	26.09	26.42
2200	6.24	0.36	28.43	28.80
2300	6.53	0.40	30.87	31.27
2400	6.81	0.43	33.40	33.83
2500	7.09	0.47	36.02	36.49
2600	7.38	0.51	38.73	39.24

10" EXISTING FORCE MAIN PIPING

DIAMETER, INCHES	10
DIAMETER, FEET	0.83
LENGTH, FEET	642
HW C-VALUE	120
MINOR LOSS K	1.00

FLOW GPM	VELOC. FPS	MINOR LOSSES	FRICTION LOSSES	TOTAL DYNAMIC LOSSES	TOTAL DYNAMIC HEAD
0	0.00	0.00	0.00	0.00	59.34
100	0.41	0.00	0.07	0.07	59.56
200	0.82	0.01	0.24	0.25	60.13
300	1.23	0.02	0.50	0.52	61.03
400	1.63	0.04	0.85	0.89	62.22
500	2.04	0.06	1.28	1.35	63.70
600	2.45	0.09	1.79	1.89	65.47
700	2.86	0.13	2.39	2.51	67.51
800	3.27	0.17	3.05	3.22	69.81
900	3.68	0.21	3.80	4.01	72.38
1000	4.09	0.26	4.62	4.88	75.21
1100	4.49	0.31	5.51	5.82	78.30
1200	4.90	0.37	6.47	6.84	81.64
1300	5.31	0.44	7.50	7.94	85.23
1400	5.72	0.51	8.60	9.11	89.06
1500	6.13	0.58	9.77	10.36	93.14
1600	6.54	0.66	11.01	11.68	97.46
1700	6.94	0.75	12.32	13.07	102.03
1800	7.35	0.84	13.69	14.53	106.83
1900	7.76	0.94	15.13	16.07	111.86
2000	8.17	1.04	16.64	17.68	117.14
2100	8.58	1.14	18.21	19.36	122.64
2200	8.99	1.26	19.85	21.10	128.38
2300	9.40	1.37	21.55	22.92	134.35
2400	9.80	1.49	23.32	24.81	140.55
2500	10.21	1.62	25.14	26.77	146.97
2600	10.62	1.75	27.04	28.79	153.63

Alt. 1 5 of 9

HYDRAULIC CALCULATIONS

MINIMUM CONDITION

STATIC HEAD = 56.00

12" PVC NEW DISCHARGE PIPING

DIAMETER, INCHES	12
DIAMETER, FEET	1.00
LENGTH, FEET	1080
HW C-VALUE	150
MINOR LOSS K	8.90

FLOW GPM	VELOC. FPS	MINOR LOSSES	FRICTION LOSSES	TOTAL DYNAMIC LOSSES
0	0.00	0.00	0.00	0.00
100	0.28	0.01	0.03	0.04
200	0.57	0.04	0.11	0.15
300	0.85	0.10	0.23	0.33
400	1.13	0.18	0.39	0.57
500	1.42	0.28	0.59	0.87
600	1.70	0.40	0.82	1.22
700	1.99	0.55	1.09	1.64
800	2.27	0.71	1.40	2.11
900	2.55	0.90	1.74	2.64
1000	2.84	1.11	2.12	3.23
1100	3.12	1.35	2.52	3.87
1200	3.40	1.60	2.97	4.57
1300	3.69	1.88	3.44	5.32
1400	3.97	2.18	3.94	6.13
1500	4.26	2.50	4.48	6.99
1600	4.54	2.85	5.05	7.90
1700	4.82	3.22	5.65	8.87
1800	5.11	3.61	6.28	9.89
1900	5.39	4.02	6.94	10.96
2000	5.67	4.45	7.63	12.08
2100	5.96	4.91	8.35	13.26
2200	6.24	5.39	9.10	14.49
2300	6.53	5.89	9.88	15.77
2400	6.81	6.41	10.69	17.10
2500	7.09	6.96	11.53	18.49
2600	7.38	7.53	12.40	19.92

Ex. 12" PVC DISCHARGE FORCE MAIN

DIAMETER, INCHES	12
DIAMETER, FEET	1.00
LENGTH, FEET	2233
HW C-VALUE	150
MINOR LOSS K	0.60

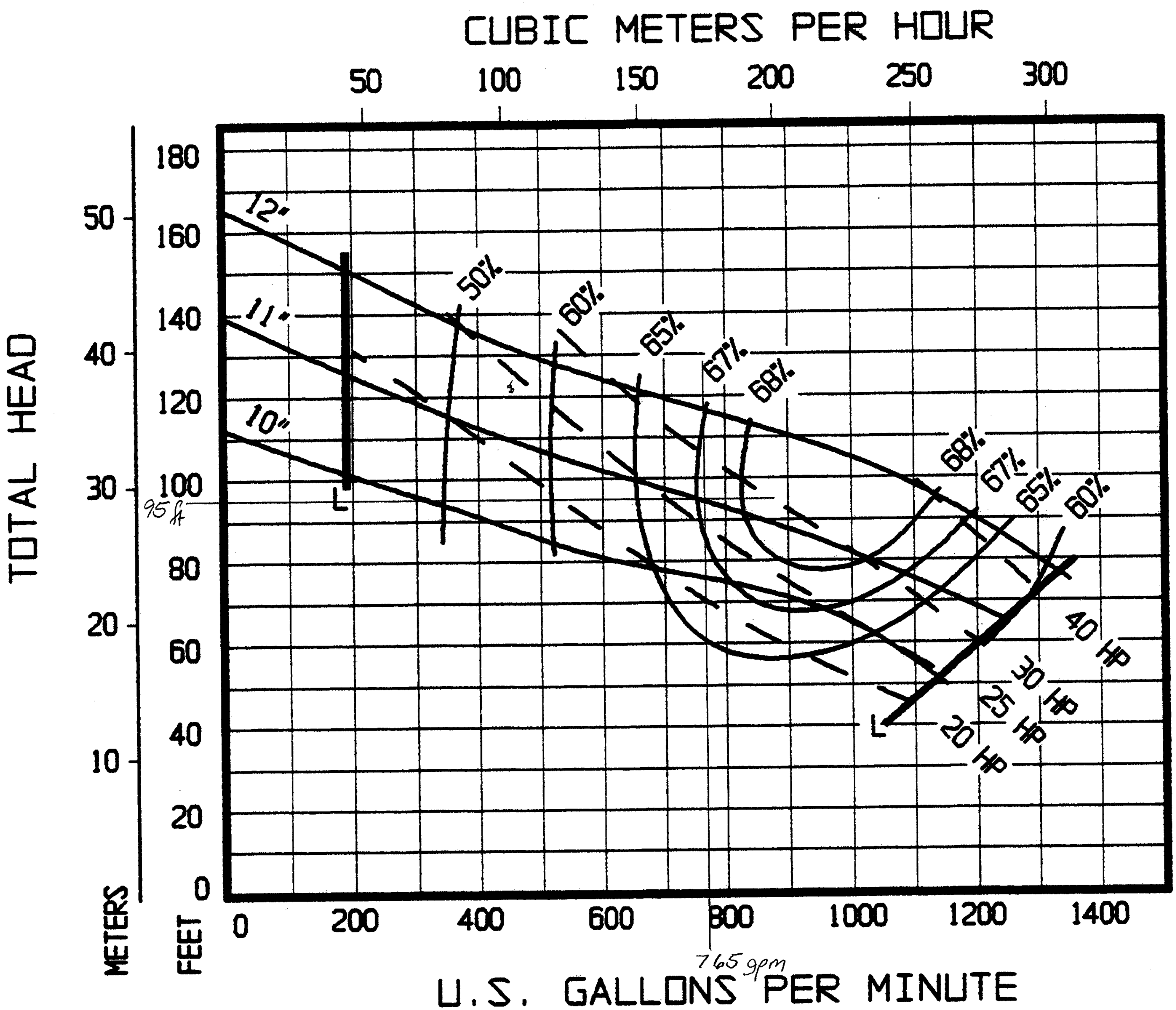
FLOW GPM	VELOC. FPS	MINOR LOSSES	FRICTION LOSSES	TOTAL DYNAMIC LOSSES
0	0.00	0.00	0.00	0.00
100	0.28	0.00	0.06	0.06
200	0.57	0.00	0.22	0.23
300	0.85	0.01	0.47	0.48
400	1.13	0.01	0.80	0.82
500	1.42	0.02	1.21	1.23
600	1.70	0.03	1.70	1.73
700	1.99	0.04	2.26	2.30
800	2.27	0.05	2.90	2.94
900	2.55	0.06	3.60	3.66
1000	2.84	0.08	4.38	4.45
1100	3.12	0.09	5.22	5.31
1200	3.40	0.11	6.13	6.24
1300	3.69	0.13	7.11	7.24
1400	3.97	0.15	8.15	8.30
1500	4.26	0.17	9.26	9.43
1600	4.54	0.19	10.44	10.63
1700	4.82	0.22	11.68	11.90
1800	5.11	0.24	12.98	13.22
1900	5.39	0.27	14.35	14.62
2000	5.67	0.30	15.78	16.08
2100	5.96	0.33	17.27	17.60
2200	6.24	0.36	18.82	19.18
2300	6.53	0.40	20.43	20.83
2400	6.81	0.43	22.10	22.54
2500	7.09	0.47	23.84	24.31
2600	7.38	0.51	25.63	26.14

10" EXISTING FORCE MAIN PIPING

DIAMETER, INCHES	10
DIAMETER, FEET	0.83
LENGTH, FEET	642
HW C-VALUE	150
MINOR LOSS K	1.00

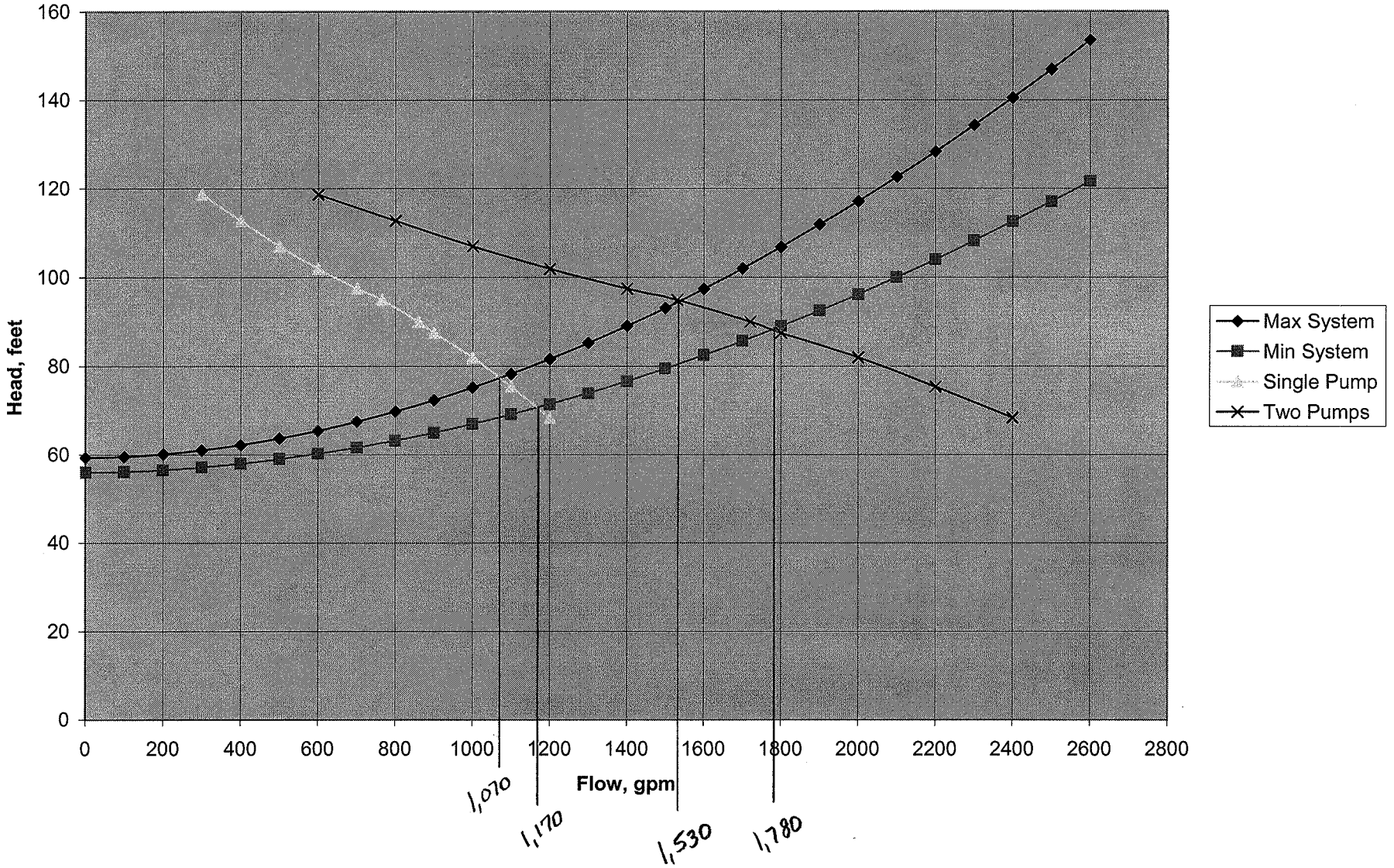
FLOW GPM	VELOC. FPS	MINOR LOSSES	FRICTION LOSSES	TOTAL DYNAMIC LOSSES	TOTAL DYNAMIC HEAD
0	0.00	0.00	0.00	0.00	56.00
100	0.41	0.00	0.04	0.05	56.15
200	0.82	0.01	0.16	0.17	56.54
300	1.23	0.02	0.33	0.35	57.16
400	1.63	0.04	0.56	0.60	57.98
500	2.04	0.06	0.85	0.91	59.01
600	2.45	0.09	1.19	1.28	60.23
700	2.86	0.13	1.58	1.71	61.64
800	3.27	0.17	2.02	2.19	63.24
900	3.68	0.21	2.51	2.72	65.03
1000	4.09	0.26	3.05	3.31	66.99
1100	4.49	0.31	3.64	3.96	69.14
1200	4.90	0.37	4.28	4.65	71.46
1300	5.31	0.44	4.96	5.40	73.96
1400	5.72	0.51	5.69	6.20	76.63
1500	6.13	0.58	6.47	7.05	79.47
1600	6.54	0.66	7.29	7.95	82.48
1700	6.94	0.75	8.15	8.90	85.66
1800	7.35	0.84	9.06	9.90	89.01
1900	7.76	0.94	10.02	10.95	92.53
2000	8.17	1.04	11.01	12.05	96.21
2100	8.58	1.14	12.05	13.20	100.05
2200	8.99	1.26	13.14	14.39	104.06
2300	9.40	1.37	14.26	15.63	108.23
2400	9.80	1.49	15.43	16.92	112.56
2500	10.21	1.62	16.64	18.26	117.05
2600	10.62	1.75	17.89	19.65	121.71

Alt. 1 6 of 9


CUBIC METERS PER HOUR
50
100
150
200
250
300
TOTAL HEAD
METERS
50
40
30
20
10
FEET
180
160
140
120
100
80
60
40
20
0
95 ft
12"
11"
10"
50%
60%
65%
67%
68%
L
40 HP
30 HP
25 HP
20 HP
0
200
400
600
800
1000
1200
1400
765 gpm
U.S. GALLONS PER MINUTE

Alt. 1 7 of 9

Alternative 1 - System Curves



Alt-1 8 of 9

YEOMANS

1999 NORTH RUBY STREET
MELROSE PARK, ILLINOIS 60160

Series 9100

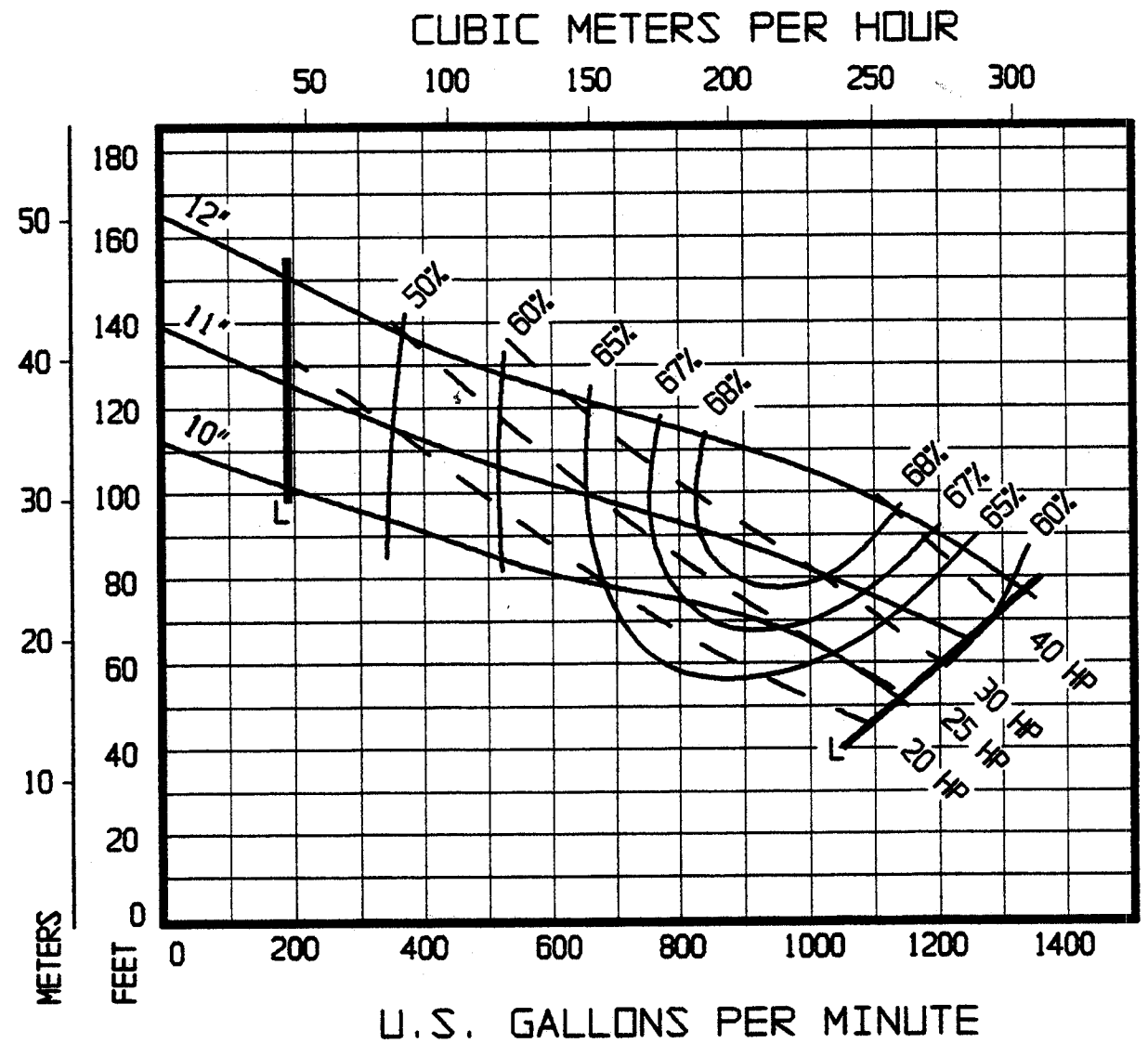
NON-CLOG SUBMERSIBLE PUMP CURVES

1750 R.P.M.

Model **4123**

Curve No.	**3503A**
Impeller No.	**Y-4575**
Number of Vanes	**2**
Max. Sphere	**3"**
Discharge Size	**4"**
Inlet Area	**12.57 sq. in.**

L=LIMIT LINE



A141 9 of 9

Submersible Wastewater Pump Association
SWPA

"SWPA Data Categories Presented — Data on this sheet supply design information as the minimum recommended by the Submersible Wastewater Pump Association (SWPA) and is defined in accordance with SWPA's Standardized Definitions for Pump and Motor

WET WELL VOLUME CALCULATION

Q(design) = 1,382 gpm

WET WELL OPERATING VOLUME DETERMINATION

$$t = \frac{4V}{Q}$$

V = Wet well operational volume
t = Pump cycle time
Q = Q(design)=Q(peak)

Approximate motor hp is 30, so use 6 starts per hour
Therefore, cycle time, t, = 10 min

and V = 3455.0 gal
= 461.9 ft^3

Estimate wet well to be 10' x 14', therefore

Operational depth in wet well = 3.30 feet

WET WELL SET POINT DETERMINATION

Lift Station pad elevation = 270.00 ft

Invert elevation = 245.00 ft

HWL alarm = 6 inches below sewer invert
= 244.50 ft

Pump "on" elevation = 6 inches below HWL alarm
= 244.00 ft

Operational depth = 3.30 ft
Pump "off" = Pump "on" - operational volume
= 240.70 ft

LWL alarm = 6 inches below Pump "off"
= 240.20 ft

Minimum pump submergence
= 2.50 ft

Wet well invert = LWL - minimum submergence
= 237.70 ft

Overall wet well depth = 32.30 ft

DESIGN FLOWRATE

Lift Station Capacity

Q(design) = 1,382 gpm

Force Main Velocity Comparison			
D, in	8	10	12
v, fps	8.8	5.6	3.9

*** Use 12" Force Main where new pipe must be constructed.

HYDRAULIC CALCULATIONS

STATIC HEAD - H(stat)

Minimum Static Head = Force Main High Point - Pump "on" elevation
H(stat,min) = 300 - 244.00 ft
H(stat,min) = 56.00 ft

Maximum Static Head = Force Main High Point - Pump "off" elevation
H(stat,max) = 300 - 240.70 ft
H(stat,max) = 59.30 ft

FRICTION LOSSES IN FORCE MAIN - Hf

Hazen-Williams Formula

$$H_f = \frac{10.44 * \left(\frac{Q}{C}\right)^{1.852} * L}{D^{4.8655}}$$

Proposed Force Main

H(f) = friction losses in ft
Q = 1,382 gpm
C = 120 for design
L = 1080 ft
D = 12.00 in
Hf = 5.85 ft

Existing 12-inch Force Main

H(f) = friction losses in ft
Q = 1,382 gpm
C = 120 for design
L = 2233 ft
D = 12.00 in
Hf = 12.09 ft

Existing 10-inch Force Main

H(f) = friction losses in ft
Q = 1,382 gpm
C = 120 for design
L = 641.82 ft
D = 10.00 in
Hf = 8.44 ft

Total, Hf = 26.37 ft

MINOR LOSSES IN FORCE MAIN- Hm

$$H_m = \sum K \frac{V^2}{2g}$$

H(m) = minor losses, ft
$\sum K$ = sum of minor loss coefficients
g = gravitational constant
= 32.17 fps^2

Proposed Force Main v, fps = 3.9

12 in

Minor loss coefficients

Description	Quantity	K-value	K-value,total
90 degree bend	6	0.3	1.8
45 degree bend	1	0.2	0.2
Tee-thru, flanged	2	0.3	0.6
Plug valve	1	1.0	1.0
Tee-branch,flanged	1	0.8	0.8
Wye	1	0.5	0.5
Check valve	1	2.5	2.5
Meter	1	1.5	1.5
Exit Loss	0	1.0	0.0

$\sum K$ = 8.9
Hm= 2.12 ft

Existing 12-inch Force Main v, fps = 3.9

Minor loss coefficients

Description	Quantity	K-value	K-value,total
90 degree bend	0	0.3	0.0
45 degree bend	3	0.2	0.6
Tee-thru, flanged	0	0.3	0.0
Plug valve	0	1.0	0.0
Tee-branch,flanged	0	0.8	0.0
Wye	0	0.5	0.0
Check valve	0	2.5	0.0
Meter	0	1.5	0.0
Exit Loss	0	1.0	0.0

$\sum K$ = 0.6
Hm= 0.14 ft

Alt. 2 3 of 9

Existing 10-inch Force Main v, fps = 5.6

Minor loss coefficients

Description	Quantity	K-value	K-value,total
90 degree bend	0	0.3	0.0
45 degree bend	0	0.2	0.0
Tee-thru, flanged	0	0.3	0.0
Plug valve	0	1.0	0.0
Tee-branch,flanged	0	0.8	0.0
Wye	0	0.5	0.0
Check valve	0	2.5	0.0
Meter	0	1.5	0.0
Exit Loss	1	1.0	1.0

$\sum K$ = 1.0

Hm= 0.50 ft

Total, Hm = 2.76

DESIGN TOTAL DYNAMIC HEAD, TDH

TDH = SUM OF ALL LOSSES
= H(stat, max) + Hf + Hm
= 88.43 ft

PUMP DESIGN PARAMETERS

Q = 1,382 gpm
TDH = 89 ft

Alt. 2 4 of 9

HYDRAULIC CALCULATIONS

MAXIMUM CONDITION

STATIC HEAD = 59.30

12" PVC NEW DISCHARGE PIPING

DIAMETER, INCHES	12
DIAMETER, FEET	1.00
LENGTH, FEET	1080
HW C-VALUE	120
MINOR LOSS K	8.90

FLOW GPM	VELOC. FPS	MINOR LOSSES	FRICTION LOSSES	TOTAL DYNAMIC LOSSES
0	0.00	0.00	0.00	0.00
100	0.28	0.01	0.05	0.06
200	0.57	0.04	0.16	0.21
300	0.85	0.10	0.34	0.44
400	1.13	0.18	0.59	0.77
500	1.42	0.28	0.89	1.17
600	1.70	0.40	1.24	1.64
700	1.99	0.55	1.65	2.20
800	2.27	0.71	2.12	2.83
900	2.55	0.90	2.63	3.53
1000	2.84	1.11	3.20	4.31
1100	3.12	1.35	3.81	5.16
1200	3.40	1.60	4.48	6.08
1300	3.69	1.88	5.20	7.08
1400	3.97	2.18	5.96	8.14
1500	4.26	2.50	6.77	9.28
1600	4.54	2.85	7.63	10.48
1700	4.82	3.22	8.54	11.75
1800	5.11	3.61	9.49	13.09
1900	5.39	4.02	10.49	14.50
2000	5.67	4.45	11.53	15.98
2100	5.96	4.91	12.62	17.53
2200	6.24	5.39	13.75	19.14
2300	6.53	5.89	14.93	20.82
2400	6.81	6.41	16.15	22.57
2500	7.09	6.96	17.42	24.38
2600	7.38	7.53	18.73	26.26

12" PVC EXISTING FORCE MAIN PIPING

DIAMETER, INCHES	12
DIAMETER, FEET	1.00
LENGTH, FEET	2233
HW C-VALUE	120
MINOR LOSS K	0.60

FLOW GPM	VELOC. FPS	MINOR LOSSES	FRICTION LOSSES	TOTAL DYNAMIC LOSSES
0	0.00	0.00	0.00	0.00
100	0.28	0.00	0.09	0.09
200	0.57	0.00	0.34	0.34
300	0.85	0.01	0.71	0.72
400	1.13	0.01	1.21	1.23
500	1.42	0.02	1.83	1.85
600	1.70	0.03	2.57	2.60
700	1.99	0.04	3.42	3.45
800	2.27	0.05	4.38	4.42
900	2.55	0.06	5.44	5.50
1000	2.84	0.08	6.61	6.69
1100	3.12	0.09	7.89	7.98
1200	3.40	0.11	9.26	9.37
1300	3.69	0.13	10.74	10.87
1400	3.97	0.15	12.32	12.47
1500	4.26	0.17	14.00	14.17
1600	4.54	0.19	15.78	15.97
1700	4.82	0.22	17.65	17.86
1800	5.11	0.24	19.62	19.86
1900	5.39	0.27	21.68	21.95
2000	5.67	0.30	23.84	24.14
2100	5.96	0.33	26.09	26.42
2200	6.24	0.36	28.43	28.80
2300	6.53	0.40	30.87	31.27
2400	6.81	0.43	33.40	33.83
2500	7.09	0.47	36.02	36.49
2600	7.38	0.51	38.73	39.24

10" EXISTING FORCE MAIN PIPING

DIAMETER, INCHES	10
DIAMETER, FEET	0.83
LENGTH, FEET	642
HW C-VALUE	120
MINOR LOSS K	1.00

FLOW GPM	VELOC. FPS	MINOR LOSSES	FRICTION LOSSES	TOTAL DYNAMIC LOSSES	TOTAL DYNAMIC HEAD
0	0.00	0.00	0.00	0.00	59.30
100	0.41	0.00	0.07	0.07	59.52
200	0.82	0.01	0.24	0.25	60.09
300	1.23	0.02	0.50	0.52	60.99
400	1.63	0.04	0.85	0.89	62.18
500	2.04	0.06	1.28	1.35	63.66
600	2.45	0.09	1.79	1.89	65.43
700	2.86	0.13	2.39	2.51	67.47
800	3.27	0.17	3.05	3.22	69.77
900	3.68	0.21	3.80	4.01	72.34
1000	4.09	0.26	4.62	4.88	75.17
1100	4.49	0.31	5.51	5.82	78.26
1200	4.90	0.37	6.47	6.84	81.60
1300	5.31	0.44	7.50	7.94	85.19
1400	5.72	0.51	8.60	9.11	89.02
1500	6.13	0.58	9.77	10.36	93.10
1600	6.54	0.66	11.01	11.68	97.42
1700	6.94	0.75	12.32	13.07	101.99
1800	7.35	0.84	13.69	14.53	106.79
1900	7.76	0.94	15.13	16.07	111.82
2000	8.17	1.04	16.64	17.68	117.10
2100	8.58	1.14	18.21	19.36	122.60
2200	8.99	1.26	19.85	21.10	128.34
2300	9.40	1.37	21.55	22.92	134.31
2400	9.80	1.49	23.32	24.81	140.51
2500	10.21	1.62	25.14	26.77	146.93
2600	10.62	1.75	27.04	28.79	153.59

A1E.2 5 of 9

HYDRAULIC CALCULATIONS

MINIMUM CONDITION

STATIC HEAD = 56.00

12" PVC NEW DISCHARGE PIPING

DIAMETER, INCHES	12
DIAMETER, FEET	1.00
LENGTH, FEET	1080
HW C-VALUE	150
MINOR LOSS K	8.90

FLOW GPM	VELOC FPS	MINOR LOSSES	FRICTION LOSSES	TOTAL DYNAMIC LOSSES
0	0.00	0.00	0.00	0.00
100	0.28	0.01	0.03	0.04
200	0.57	0.04	0.11	0.15
300	0.85	0.10	0.23	0.33
400	1.13	0.18	0.39	0.57
500	1.42	0.28	0.59	0.87
600	1.70	0.40	0.82	1.22
700	1.99	0.55	1.09	1.64
800	2.27	0.71	1.40	2.11
900	2.55	0.90	1.74	2.64
1000	2.84	1.11	2.12	3.23
1100	3.12	1.35	2.52	3.87
1200	3.40	1.60	2.97	4.57
1300	3.69	1.88	3.44	5.32
1400	3.97	2.18	3.94	6.13
1500	4.26	2.50	4.48	6.99
1600	4.54	2.85	5.05	7.90
1700	4.82	3.22	5.65	8.87
1800	5.11	3.61	6.28	9.89
1900	5.39	4.02	6.94	10.96
2000	5.67	4.45	7.63	12.08
2100	5.96	4.91	8.35	13.26
2200	6.24	5.39	9.10	14.49
2300	6.53	5.89	9.88	15.77
2400	6.81	6.41	10.69	17.10
2500	7.09	6.96	11.53	18.49
2600	7.38	7.53	12.40	19.92

Ex. 12" PVC DISCHARGE FORCE MAIN

DIAMETER, INCHES	12
DIAMETER, FEET	1.00
LENGTH, FEET	2233
HW C-VALUE	150
MINOR LOSS K	0.60

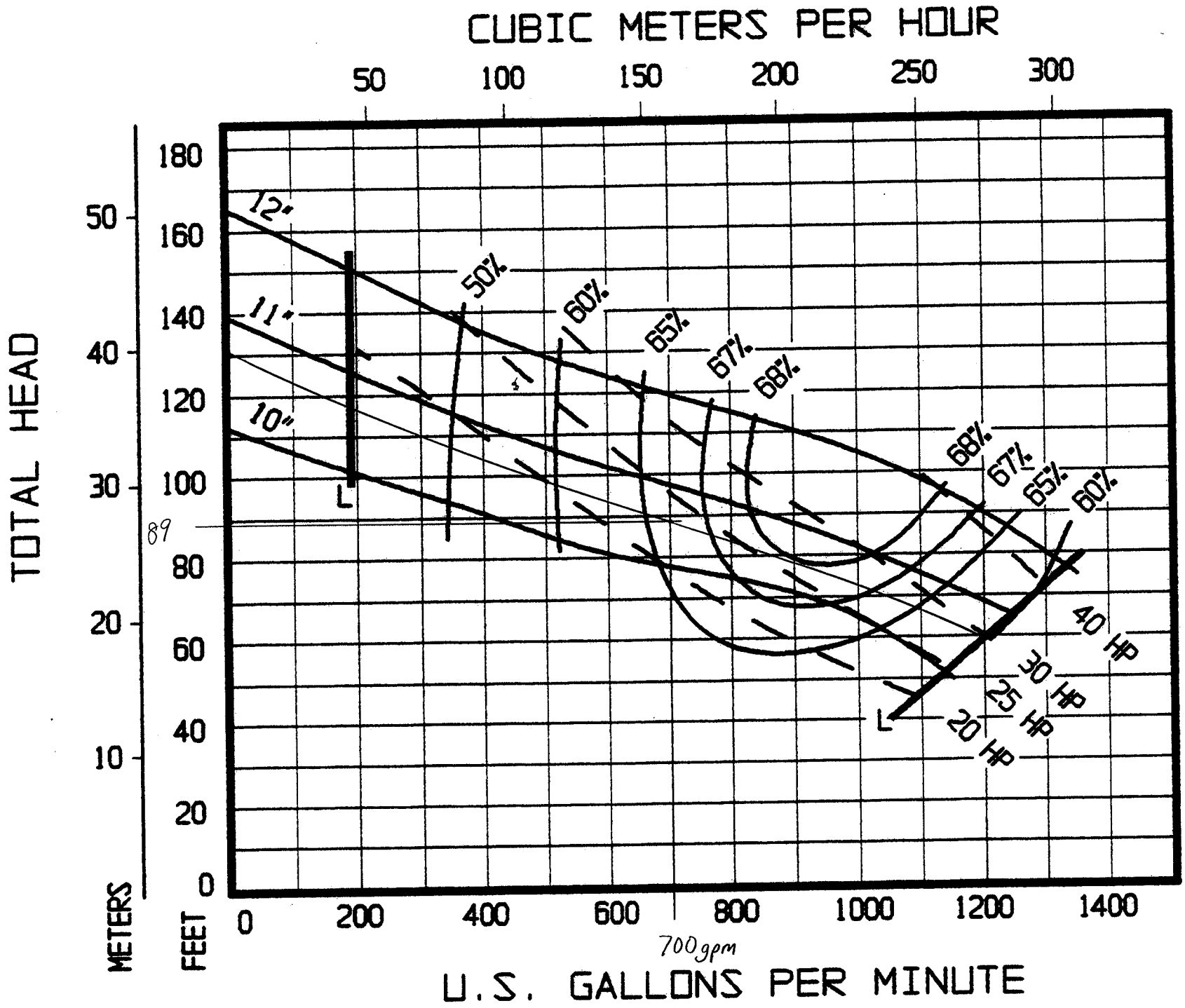
FLOW GPM	VELOC FPS	MINOR LOSSES	FRICTION LOSSES	TOTAL DYNAMIC LOSSES
0	0.00	0.00	0.00	0.00
100	0.28	0.00	0.06	0.06
200	0.57	0.00	0.22	0.23
300	0.85	0.01	0.47	0.48
400	1.13	0.01	0.80	0.82
500	1.42	0.02	1.21	1.23
600	1.70	0.03	1.70	1.73
700	1.99	0.04	2.26	2.30
800	2.27	0.05	2.90	2.94
900	2.55	0.06	3.60	3.66
1000	2.84	0.08	4.38	4.45
1100	3.12	0.09	5.22	5.31
1200	3.40	0.11	6.13	6.24
1300	3.69	0.13	7.11	7.24
1400	3.97	0.15	8.15	8.30
1500	4.26	0.17	9.26	9.43
1600	4.54	0.19	10.44	10.63
1700	4.82	0.22	11.68	11.90
1800	5.11	0.24	12.98	13.22
1900	5.39	0.27	14.35	14.62
2000	5.67	0.30	15.78	16.08
2100	5.96	0.33	17.27	17.60
2200	6.24	0.36	18.82	19.18
2300	6.53	0.40	20.43	20.83
2400	6.81	0.43	22.10	22.54
2500	7.09	0.47	23.84	24.31
2600	7.38	0.51	25.63	26.14

10" EXISTING FORCE MAIN PIPING

DIAMETER, INCHES	10
DIAMETER, FEET	0.83
LENGTH, FEET	642
HW C-VALUE	150
MINOR LOSS K	1.00

FLOW GPM	VELOC FPS	MINOR LOSSES	FRICTION LOSSES	TOTAL DYNAMIC LOSSES	TOTAL DYNAMIC HEAD
0	0.00	0.00	0.00	0.00	56.00
100	0.41	0.00	0.04	0.05	56.15
200	0.82	0.01	0.16	0.17	56.54
300	1.23	0.02	0.33	0.35	57.16
400	1.63	0.04	0.56	0.60	57.98
500	2.04	0.06	0.85	0.91	59.01
600	2.45	0.09	1.19	1.28	60.23
700	2.86	0.13	1.58	1.71	61.64
800	3.27	0.17	2.02	2.19	63.24
900	3.68	0.21	2.51	2.72	65.03
1000	4.09	0.26	3.05	3.31	66.99
1100	4.49	0.31	3.64	3.96	69.14
1200	4.90	0.37	4.28	4.65	71.46
1300	5.31	0.44	4.96	5.40	73.96
1400	5.72	0.51	5.69	6.20	76.63
1500	6.13	0.58	6.47	7.05	79.47
1600	6.54	0.66	7.29	7.95	82.48
1700	6.94	0.75	8.15	8.90	85.66
1800	7.35	0.84	9.06	9.90	89.01
1900	7.76	0.94	10.02	10.95	92.53
2000	8.17	1.04	11.01	12.05	96.21
2100	8.58	1.14	12.05	13.20	100.05
2200	8.99	1.26	13.14	14.39	104.06
2300	9.40	1.37	14.26	15.63	108.23
2400	9.80	1.49	15.43	16.92	112.56
2500	10.21	1.62	16.64	18.26	117.05
2600	10.62	1.75	17.89	19.65	121.71

Alt. 2 6 of 9


CUBIC METERS PER HOUR
50
100
150
200
250
300
TOTAL HEAD
METERS
FEET
180
160
140
120
100
80
60
40
20
0
50
40
30
20
10
0
12"
11"
10"
50%
60%
65%
67%
68%
L
89
40 HP
30 HP
25 HP
20 HP
0
200
400
600
800
1000
1200
1400
700 gpm
U.S. GALLONS PER MINUTE

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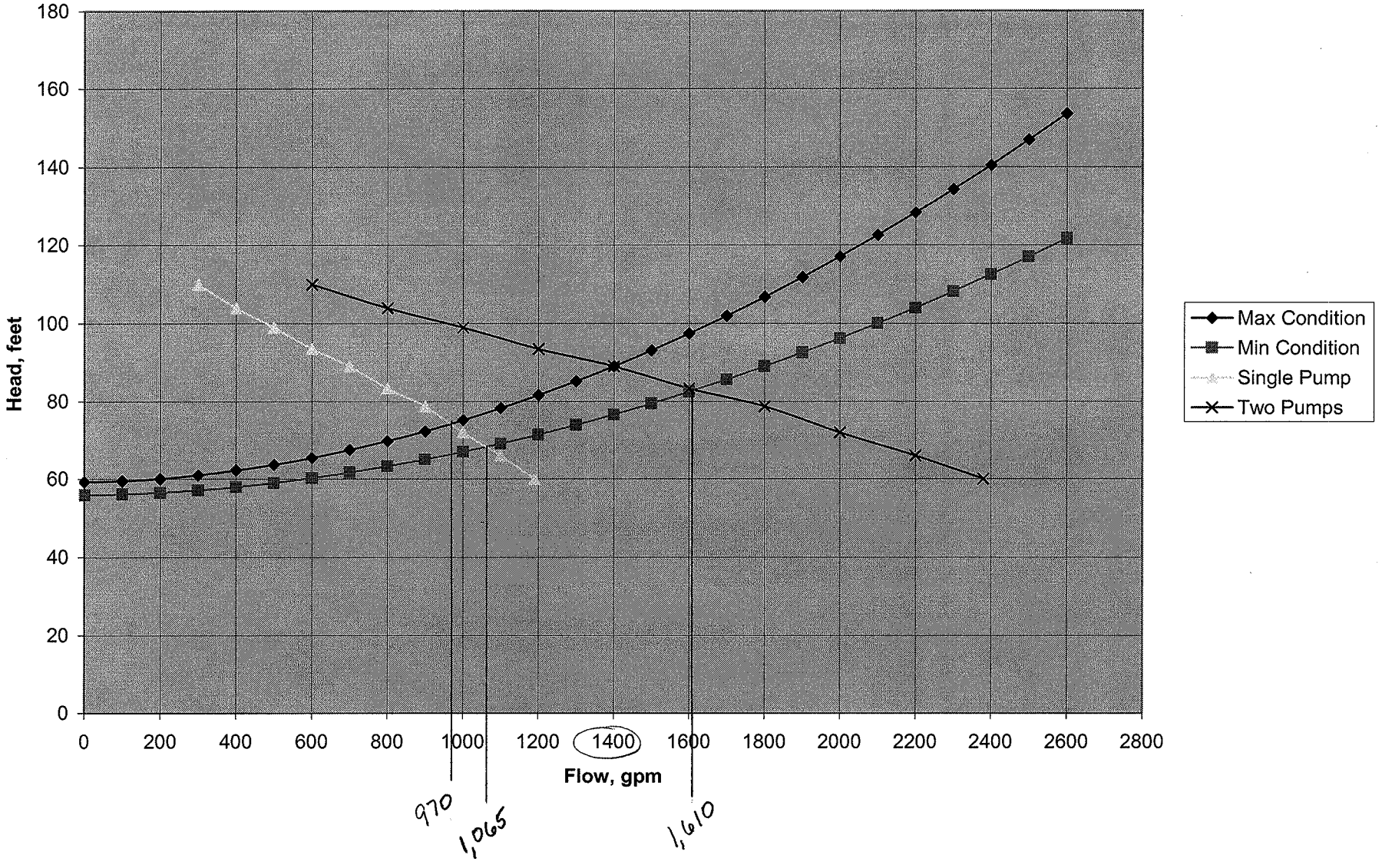
Alternative 2 - System Curves



Alt. 2 8 of 9

YEOMANS

1999 NORTH RUBY STREET
MELROSE PARK, ILLINOIS 60160

Series 9100

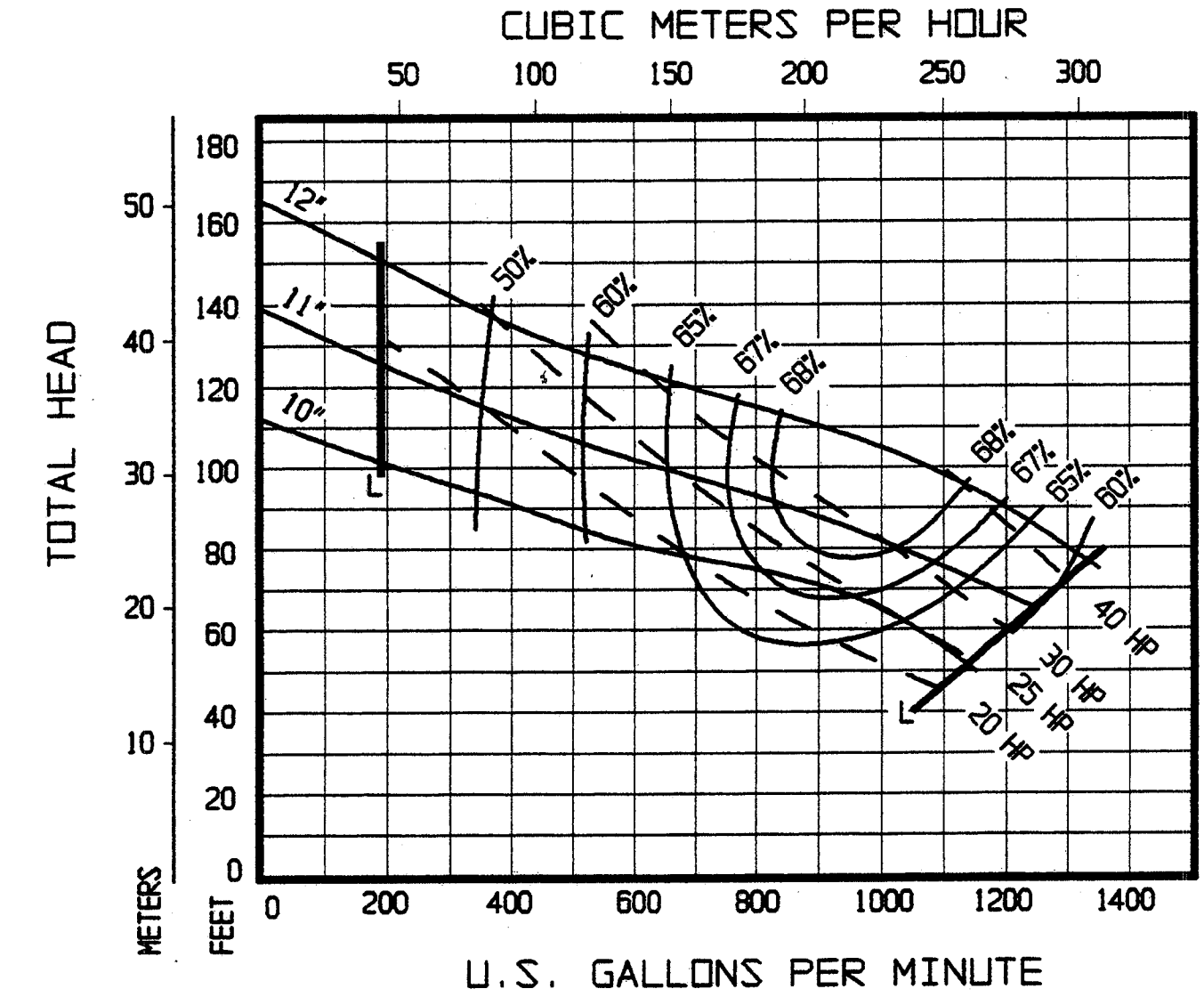
NON-CLOG SUBMERSIBLE PUMP CURVES

1750 R.P.M.

Model **4123**

Curve No.	**3503A**
Impeller No.	**Y-4575**
Number of Vanes	**2**
Max. Sphere	**3"**
Discharge Size	**4"**
Inlet Area	**12.57 sq. in.**

L=LIMIT LINE



Alt. 2 9 of 9

Submersible Wastewater Pump Association
SWPA

"SWPA Data Categories Presented — Data on this sheet supply design information as the minimum recommended by the Submersible Wastewater Pump Association (SWPA)

PROJECT FACILITY AVAILABLITY FORMS

COUNTY OF SAN DIEGO
DEPT. OF PLANNING & LAND USE
5201 RUFFIN ROAD, SUITE B
SAN DIEGO, CA 92123-1666
(858) 565-5981 • (888) 267-8770

PROJECT FACILITY AVAILABILITY FORM

WATER

W

Please type or use pen

Passerelle, LLC — 619-696-7355
Owner's Name — Phone

402 West Broadway, Suite 1320
Owner's Mailing Address — Street

San Diego — CA — 92101
City — State — Zip

ORG_____
ACCT_____
ACT_____
TASK_____
DATE 7-1-08

AMT $ 300

DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION — TO BE COMPLETED BY APPLICANT

A.
- [x] Major Subdivision (TM)
- [x] Specific Plan or Specific Plan Amendment
- [ ] Minor Subdivision (TPM)
- [ ] Certificate of Compliance:_____
- [ ] Boundary Adjustment
- [x] Rezone (Reclassification) from A70 & S90 to S88 zone.
- [ ] Major Use Permit (MUP), purpose:_____
- [ ] Time Extension...Case No._____
- [ ] Expired Map...Case No._____
- [x] Other General Plan Amendment

B.
- [x] Residential . . . . . Total number of dwelling units 1,088
- [x] Commercial. . . . . Gross floor area 62,000 sf
- [ ] Industrial . . . . . Gross floor area_____
- [x] Other . . . . . Gross floor area 150,000 sf

C. [x] Total Project acreage 416 Total number of lots 540

D. Is the project proposing the use of groundwater? [ ] Yes [x] No
Is the project proposing the use of reclaimed water? [ ] Yes [x] No

Assessor's Parcel Number(s)
(Add extra if necessary)

1	0	8	1	2	0	4	7
1	0	8	1	2	0	4	9
1	0	8	1	2	0	5	0
1	0	8	1	2	0	5	1

Thomas Bros. Page 1048 Grid _____

N/A
Project address — Street

Fallbrook — 92028
Community Planning Area/Subregion — Zip

Owner/Applicant agrees to pay all necessary construction costs, dedicate all district required easements to extend service to the project and COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.

Applicant's Signature:_____ Date: 5-21-08

Address: 402 West Broadway, Ste 1320, San Diego, CA Phone: 619-696-7355

(On completion of above, present to the district that provides water protection to complete Section 2 below.)

SECTION 2: FACILITY AVAILABILITY — TO BE COMPLETED BY DISTRICT

District Name: Rainbow Municipal Water Dist. Service area Fallbrook

A.
- [x] Project is in the district.
- [ ] Project is not in the district but is within its Sphere of Influence boundary, owner must apply for annexation.
- [ ] Project is not in the district and is not within its Sphere of Influence boundary.
- [ ] The project is not located entirely within the district and a potential boundary issue exists with the _____ District.

B. [x] Facilities to serve the project [x] ARE [ ] ARE NOT reasonably expected to be available within the next 5 years based on the capital facility plans of the district. Explain in space below or on attached_____. (Number of sheets)
- [ ] Project will not be served for the following reason(s):_____

C.
- [ ] **District conditions are attached. Number of sheets attached:**_____
- [ ] **District has specific water reclamation conditions which are attached. Number of sheets attached:**_____
- [x] **District will submit conditions at a later date.**

D. [ ] **How far will the pipeline(s) have to be extended to serve the project?**_____

This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted.

Authorized signature: Brian Lee Print name Brian Lee

Print title District Engineer Phone (760) 728-1178 Date 7-21-08

NOTE: THIS DOCUMENT IS NOT A COMMITMENT OF SERVICE OR FACILITIES BY THE DISTRICT
On completion of Section 2 by the district, applicant is to submit this form with application to:
Zoning Counter, Department of Planning and Land Use, 5201 Ruffin Road, San Diego, CA 92123

COUNTY OF SAN DIEGO
DEPT. OF PLANNING & LAND USE
5201 RUFFIN ROAD, SUITE B
SAN DIEGO, CA 92123-1666
(858) 565-5981 • (888) 267-8770

PROJECT FACILITY AVAILABILITY FORM

SEWER

S

Please type or use pen

Passerelle, LLC — 619-696-7355
Owner's Name — Phone

402 West Broadway, Suite 1320
Owner's Mailing Address — Street

San Diego — CA — 92101
City — State — Zip

ORG _____
ACCT _____
ACT _____
TASK _____
DATE 7-1-08 AMT $ 75.00

DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION — TO BE COMPLETED BY APPLICANT

A. [X] Major Subdivision (TM) [ ] Certificate of Compliance: _____
[ ] Minor Subdivision (TPM) [ ] Boundary Adjustment
[X] Specific Plan or Specific Plan Amendment
[X] Rezone (Reclassification) from A70 & S90 to S88 zone
[ ] Major Use Permit (MUP), purpose: _____
[ ] Time Extension...Case No. _____
[ ] Expired Map...Case No. _____
[X] Other General Plan Amendment

B. [X] Residential . . . . . Total number of dwelling units 1,088
[X] Commercial. . . . . Gross floor area 62,000 sf
[ ] Industrial . . . . . Gross floor area _____
[X] Other . . . . . Gross floor area 150,000 sf

C. Total Project acreage 416.1 Total lots 540 Smallest proposed lot 4,000 sf

D. Is the project proposing its own wastewater treatment plant? Yes [ ] No [X]
Is the project proposing the use of reclaimed water? [ ] [X]

Assessor's Parcel Number(s)
(Add extra if necessary)

1	0	8	1	2	0	4	7
1	0	8	1	2	0	4	9
1	0	8	1	2	0	5	0
1	0	8	1	2	0	5	1

Thomas Bros. Page 1028 &1048 Grid _____

N/A
Project address — Street

Fallbrook — 92028
Community Planning Area/Subregion — Zip

Owner/Applicant agrees to pay all necessary construction costs and dedicate all district required easements to extend service to the project.
OWNER/APPLICANT MUST COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.

Applicant's Signature: _____ Date: 5-21-08

Address: 402 West Broadway, Ste 1320, San Diego, CA Phone: 619-696-7355

(On completion of above, present to the district that provides sewer protection to complete Section 2 below.)

SECTION 2: FACILITY AVAILABILITY — TO BE COMPLETED BY DISTRICT

District name Rainbow Municipal Water Dist Service area Fallbrook

A. [X] Project is in the District.
[ ] Project is not in the District but is within its Sphere of Influence boundary, owner must apply for annexation.
[ ] Project is not in the District and is **not** within its Sphere of Influence boundary.
[ ] Project is not located entirely within the District and a potential boundary issue exists with the _____ District.

B. [X] Facilities to serve the project [ ] ARE [X] ARE NOT reasonably expected to be available within the next 5 years based on the capital facility plans of the district. Explain in space below or on attached. Number of sheets attached: _____
[ ] Project will not be served for the following reason(s): _____

C. [ ] **District conditions are attached. Number of sheets attached:** _____
[ ] **District has specific water reclamation conditions which are attached. Number of sheets attached:** _____
[X] **District will submit conditions at a later date.**

D. [ ] **How far will the pipeline(s) have to be extended to serve the project?** _____

This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted.

Authorized signature — Brian Lee (Print name)

District Engineer — (760) 728-1178 — 7-21-08
Print title — Phone — Date

NOTE: THIS DOCUMENT IS NOT A COMMITMENT OF FACILITIES OR SERVICE BY THE DISTRICT On completion of Section 2 by the district, applicant is to submit this form with application to: Zoning Counter, Department of Planning and Land Use, 5201 Ruffin Road, San Diego, CA 92123

COUNTY OF SAN DIEGO
DEPT. OF PLANNING & LAND USE
5201 RUFFIN ROAD, SUITE B
SAN DIEGO, CA 92123-1666
(858) 565-5981 • (888) 267-8770

PROJECT FACILITY AVAILABILITY FORM

SCHOOL

Please type or use pen
(Two forms are needed if project is to be served by separate school districts)

Passerelle, LLC — 619-696-7355
Owner's Name — Phone

402 West Broadway, Suite 1320
Owner's Mailing Address — Street

San Diego — CA — 92101
City — State — Zip

ORG_____
ACCT_____
ACT_____
TASK_____
DATE_____

Sc

ELEMENTARY_____
HIGH SCHOOL_____
UNIFIED_____

DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION — TO BE COMPLETED BY APPLICANT

A. **LEGISLATIVE ACT**
- ☐ Rezones changing Use Regulations or Development Regulations
- ☐ General Plan Amendment
- ☐ Specific Plan
- ☐ Specific Plan Amendment

B. **DEVELOPMENT PROJECT**
- ☐ Rezones changing Special Area or Neighborhood Regulations
- ☒ Major Subdivision (TM)
- ☐ Minor Subdivision (TPM)
- ☐ Boundary Adjustment
- ☐ Major Use Permit (MUP), purpose:_____
- ☐ Time Extension...Case No._____
- ☐ Expired Map...Case No._____
- ☒ Other General Plan Amendment; Rezone; Specific Plan Amendment

C.
- ☒ Residential . . . . . Total number of dwelling units 1,088
- ☒ Commercial . . . . . Gross floor area 62,000 sf
- ☐ Industrial . . . . . Gross floor area_____
- ☒ Other . . . . . Gross floor area 150,000 sf

D. ☒ Total Project acreage 416.1 Total number lots 540

Assessor's Parcel Number(s)
(Add extra if necessary)

1	0	8	1	2	0	4	7
1	0	8	1	2	0	4	9
1	0	8	1	2	0	5	0
1	0	8	1	2	0	5	1

Thomas Bros. Page 1048 Grid _____

N/A
Project address — Street

Fallbrook — 92028
Community Planning Area/Subregion — Zip

Applicant's Signature: _____ Date: 5-21-08

Address: 402 West Broadway, Ste 1320, San Diego, CA Phone: 619-696-7355

(On completion of above, present to the district that provides school protection to complete Section 2 below.)

SECTION 2: FACILITY AVAILABILITY — TO BE COMPLETED BY DISTRICT

If not in a unified district, which elementary or high school district must also fill out a form?

District Name: Fallbrook Union Elementary School District

Indicate the location and distance of proposed schools of attendance. Elementary: Fallbrook Street School 8.53 miles Live Oak School miles 5.13

Junior/Middle: Potter Jr. High miles: 5.44 High school:_____ miles_____

- ☒ This project will result in the overcrowding of the ☒ elementary ☒ junior/school ☐ high school. *(Check)*
- ☒ Fees will be levied or land will be dedicated in accordance with Education Code Section 17620 prior to the issuance of building permits.
- ☐ Project is located entirely within the district and is eligible for service.
- ☒ The project is not located entirely within the district and a potential boundary issue may exist with the Bonsall School District school district.

_____ Raymond N. Proctor
Authorized signature — *Print name*

Assistant Superintendent of Business Services (760) 731-5445
Print title — *Phone* 6-3-08

On completion of Section 2 by the district, applicant is to submit this form with application to:
Zoning Counter, Department of Planning and Land Use, 5201 Ruffin Road, San Diego, CA 92123

COUNTY OF SAN DIEGO
DEPT. OF PLANNING & LAND USE
5201 RUFFIN ROAD, SUITE B
SAN DIEGO, CA 92123-1666
(858) 565-5981 • (888) 267-8770

PROJECT FACILITY AVAILABILITY FORM

SCHOOL

Sc

Please type or use pen
(Two forms are needed if project is to be served by separate school districts)

Passerelle, LLC — 619-696-7355
Owner's Name — Phone

402 West Broadway, Suite 1320
Owner's Mailing Address — Street

San Diego — CA — 92101
City — State — Zip

ORG_____
ACCT_____
ACT_____
TASK_____
DATE_____

ELEMENTARY_____
HIGH SCHOOL_____
UNIFIED_____

DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION — TO BE COMPLETED BY APPLICANT

A. **LEGISLATIVE ACT**
- ☐ Rezones changing Use Regulations or Development Regulations
- ☐ General Plan Amendment
- ☐ Specific Plan
- ☐ Specific Plan Amendment

B. **DEVELOPMENT PROJECT**
- ☐ Rezones changing Special Area or Neighborhood Regulations
- ☒ Major Subdivision (TM)
- ☐ Minor Subdivision (TPM)
- ☐ Boundary Adjustment
- ☐ Major Use Permit (MUP), purpose:_____
- ☐ Time Extension...Case No._____
- ☐ Expired Map...Case No._____
- ☒ Other General Plan Amendment; Rezone; Specific Plan Amendment

Assessor's Parcel Number(s)
(Add extra if necessary)

1	0	8	1	2	0	4	7
1	0	8	1	2	0	4	9
1	0	8	1	2	0	5	0
1	0	8	1	2	0	5	1

Thomas Bros. Page 1048 Grid _____

N/A
Project address — Street

Fallbrook — 92028
Community Planning Area/Subregion — Zip

C.
- ☒ Residential . . . . . Total number of dwelling units 1,088
- ☒ Commercial . . . . . Gross floor area 62,000 sf
- ☐ Industrial . . . . . Gross floor area_____
- ☒ Other . . . . . Gross floor area 150,000 sf

D. ☒ Total Project acreage 416.1 Total number lots 540

Applicant's Signature: _____ Date: 5-21-08

Address: 402 West Broadway, Ste 1320, San Diego, CA Phone: 619-696-7355

(On completion of above, present to the district that provides school protection to complete Section 2 below.)

SECTION 2: FACILITY AVAILABILITY — TO BE COMPLETED BY DISTRICT

District Name: Fallbrook Union High

If not in a unified district, which elementary or high school district must also fill out a form? FUESD

Indicate the location and distance of proposed schools of attendance. Elementary:_____ miles_____

Junior/Middle:_____ miles:_____ High school: Fallbrook miles_____

- ☑ This project will result in the overcrowding of the ☐ elementary ☐ junior/school ☑ high school. *(Check)*
- ☑ Fees will be levied or land will be dedicated in accordance with Education Code Section 17620 prior to the issuance of building permits.
- ☑ Project is located entirely within the district and is eligible for service.
- ☐ The project is not located entirely within the district and a potential boundary issue may exist with the _____ school district.

Chester E. Gannett 7/25/08
Authorized signature

Chester E. Gannett
Print name

Assistant Superintendent
Print title

760-723-6332 x6195
Phone

On completion of Section 2 by the district, applicant is to submit this form with application to:
Zoning Counter, Department of Planning and Land Use, 5201 Ruffin Road, San Diego, CA 92123

DPLU-399Sc (03/03)

COUNTY OF SAN DIEGO
DEPT. OF PLANNING & LAND USE
5201 RUFFIN ROAD, SUITE B
SAN DIEGO, CA 92123-1666
(858) 565-5981 • (888) 267-8770

BONSALL UNION SCHOOL DISTRICT

PROJECT FACILITY AVAILABILITY FORM

SCHOOL

Sc

Please type or use pen
(Two forms are needed if project is to be served by separate school districts)

Owner's Name: PASSERELLE LLC Phone: 686-2355
Owner's Mailing Address: 402 WEST BROADWAY, SUITE 1320 Street
City: San Diego, State: CA Zip: 92101

ORG______
ACCT______
ACT______
TASK______
DATE______

ELEMENTARY______
HIGH SCHOOL______
UNIFIED______

DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION — TO BE COMPLETED BY APPLICANT

A. LEGISLATIVE ACT
- [x] Rezones changing Use Regulations or Development Regulations
- [x] General Plan Amendment
- [ ] Specific Plan
- [ ] Specific Plan Amendment

B. DEVELOPMENT PROJECT
- [ ] Rezones changing Special Area or Neighborhood Regulations
- [x] Major Subdivision (TM)
- [ ] Minor Subdivision (TPM)
- [ ] Boundary Adjustment
- [ ] Major Use Permit (MUP), purpose:
- [ ] Time Extension...Case No.
- [ ] Expired Map...Case No.
- [ ] Other

C.
- [x] Residential ...... Total number of dwelling units 3CC HF
- [x] Commercial ..... Gross floor area Ø
- [x] Industrial .... Gross floor area Ø
- [ ] Other .... Gross floor area Ø

D. [x] Total Project acreage 416 Total number of lots TDB

Assessor's Parcel Number(s) (Add extra if necessary): See Attached

Thomas Bros. Page 1028 Grid H1 J1-7
1048 H1 J1
Project address / Street

FALLBROOK 92028 — Community Planning Area/Subregion / Zip

Applicant's Signature: [signature] Date: 7-25-08
Address: Same as Above Phone: 619 686-2355

(On completion of above, present to the district that provides school protection to complete Section 2 below.)

SECTION 2: FACILITY AVAILABILITY — TO BE COMPLETED BY DISTRICT

District Name: BONSALL UNION

If not in a unified district, which elementary or high school district must also fill out a form? FALLBROOK HS, FALLBROOK ELEM

Indicate the location and distance of proposed schools of attendance. Elementary: BONSALL ELEM miles 6
Junior/Middle: NORM SULLIVAN miles: 4 1/2 High school: FALLBROOK miles 7 1/2

- [x] This project will result in the overcrowding of the [x] elementary [x] junior/school [x] high school. (Check)
- [x] Fees will be levied or land will be dedicated in accordance with Education Code Section 17620 prior to the issuance of building permits.
- [ ] Project is located entirely within the district and is eligible for service.
- [x] The project is not located entirely within the district and a potential boundary issue may exist with the FALLBROOK ELEM school district.

Authorized signature: [signature] Print name: WAYNE A. JONES
Print title: ASSISTANT SUPERINTENDENT Phone: 760 631 5200 X105

On completion of Section 2 by the district, applicant is to submit this form with application to:
Zoning Counter, Department of Planning and Land Use, 5201 Ruffin Road, San Diego, CA 92123

COUNTY OF SAN DIEGO
DEPT. OF PLANNING & LAND USE
5201 RUFFIN ROAD, SUITE B
SAN DIEGO, CA 92123-1666
(858) 565-5981 • (888) 267-8770

TM-5338

RECEIVED
JUN - 2 2008
North County Fire Protection District

PROJECT FACILITY AVAILABILITY FORM

FIRE F

Please type or use pen

Passerelle, LLC — 619-696-7355
Owner's Name — Phone

402 West Broadway, Suite 1320
Owner's Mailing Address — Street

San Diego — CA — 92101
City — State — Zip

ORG_____
ACCT_____
ACT_____
TASK_____
DATE_____ AMT $_____
DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION — TO BE COMPLETED BY APPLICANT

A. [X] Major Subdivision (TM) [X] Specific Plan or Specific Plan Amendment
[ ] Minor Subdivision (TPM) [ ] Certificate of Compliance:_____
[ ] Boundary Adjustment
[X] Rezone (Reclassification) from A70 & S90 to S88 zone.
[ ] Major Use Permit (MUP), purpose:_____
[ ] Time Extension...Case No._____
[ ] Expired Map...Case No._____
[X] Other General Plan Amendment

B. [X] Residential . . . . . Total number of dwelling units 1,088
[X] Commercial . . . . . Gross floor area 62,000 sf
[ ] Industrial . . . . . Gross floor area_____
[X] Other . . . . . Gross floor area 150,000 sf

C. Total Project acreage 416.1 Total lots 540 Smallest proposed lot 4,000 sf

Assessor's Parcel Number(s)
(Add extra if necessary)

1	0	8	1	2	0	4	7
1	0	8	1	2	0	4	9
1	0	8	1	2	0	5	0
1	0	8	1	2	0	5	1

Thomas Bros. Page 1048 Grid _____

N/A
Project address — Street

Fallbrook — 92028
Community Planning Area/Subregion — Zip

OWNER/APPLICANT AGREES TO COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.

Applicant's Signature: _____ Date: 5-21-08

Address: 402 West Broadway, Ste 1320, San Diego, CA Phone: 619-696-7355

(On completion of above, present to the district that provides fire protection to complete Section 2 and 3 below.)

SECTION 2: FACILITY AVAILABILITY — TO BE COMPLETED BY DISTRICT

District name North County Fire Protection District

Indicate the location and distance of the primary fire station that will serve the proposed project: 4375 Pala Mesa Drive, 4375 Pala Mesa Drive

A. [X] Project is in the District and eligible for service.
[ ] Project is not in the District but is within its Sphere of Influence boundary, owner must apply for annexation.
[ ] Project is not in the District and not within its Sphere of Influence boundary.
[ ] Project is not located entirely within the District and a potential boundary issue exists with the _____ District.

B. [ ] Based on the capacity and capability of the District's existing and planned facilities, fire protection facilities are currently adequate or will be adequate to serve the proposed project. The expected emergency travel time to the proposed project is _____ minutes.
[X] Fire protection facilities are not expected to be adequate to serve the proposed development within the next five years.

C. [ ] District conditions are attached. Number of sheets attached:_____
[ ] District will submit conditions at a later date.

SECTION 3. FUELBREAK REQUIREMENTS

Note: The fuelbreak requirements prescribed by the fire district for the proposed project do not authorize any clearing prior to project approval by the Department of Planning and Land Use.

[ ] Within the proposed project _____ feet of clearing will be required around all structures.
[X] The proposed project is located in a hazardous wildland fire area, and additional fuelbreak requirements may apply. Environmental mitigation requirements should be coordinated with the fire district to ensure that these requirements will not pose fire hazards.

This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted.

Sid Morell / Fire Marshal / 760-723-2095 / 6-6-08
Authorized signature — *Print name and title* — *Phone* — *Date*

On completion of Section 2 and 3 by the District, applicant is to submit this form with application to:
Zoning Counter, Department of Planning and Land Use, 5201 Ruffin Road, Suite B, San Diego, CA 92123

DPLU-399F (09/06)

NORTH COUNTY FIRE PROTECTION DISTRICT

315 East Ivy Street · Fallbrook, California 92028-2138 · (760) 723-2005 · Fax (760) 723-2004 · www.ncfire.org

BOARD OF DIRECTORS
LORI A. GRAHAM
RUTH HARRIS
KENNETH E. MUNSON
RICHARD A. OLSON
KATHLEEN THUNER

WILLIAM R. METCALF – Fire Chief/CEO
ROBERT H. JAMES – Counsel
LOREN A. STEPHEN-PORTER – Board Secretary

June 6, 2008

County of San Diego
Dept. of Planning & Land Use
5201 Ruffin Rd. Ste. B
San Diego, CA 92123-1666

RE: TM 5338 RPL 4 Campus Park (formerly Passerelle Project)

Please review the following comments pertaining to fire protection for this proposed development:

Access: Interior access roads to conform to S.D. Co. Standards for Private/Public Roads, to include on-street parking when so indicated by parcel sizing & use. Based upon density provided, on-street parking on both sides of streets is indicated, thereby requiring 36' AC surface roads.
In multi-family areas, "private driveways" are proposed for garage access. These are required to be designated "fire lanes" or fire access roadways. Our concern is that parking proposed is distant from the majority of the residences, and does not appear to be adequate in count. Guest parking and disabled parking is not clearly defined. Driveways directly in front of garages typically would not accommodate even a compact car. Similar existing projects have demonstrated that people will violate posted "fire lane" signs if reasonable parking accommodation is not provided. Obstructed fire lanes result in delayed emergency responses, and can create life-threatening situations. Increased enforcement is not feasible and not a substitute for adequate design.

The following roads must be constructed prior to phases:

- Pala Mesa Drive west of I-15 prior to any construction north of the intersection of Pala Mesa Drive and Horse Ranch Creek Road.
- Horse Ranch Creek Road: Hwy 76 to Stewart Canyon road prior to any construction north of Harvest Glen Lane.
- Baltimore Oriole Road: (appears to be the same as Pala Mesa Heights Road) connected to Pala Mesa Heights Road to Meadowood project "Street D" prior to construction in the vicinity of Song Sparrow Drive.
- Pankey Road connected to Horse Ranch Creek Rad prior to construction east of Horse Ranch Creek Road.
- Provide 42' AC radius cul-de-sacs all access roads greater than 150'.
- Improvement of Pala Mesa Dr., from Hwy 395 to Pankey Rd., will ensure fire apparatus response time within 5 minutes to all portions of this development. *Therefore, it is necessary to improve Pala Mesa Dr. from the existing Fire Station #4 to the project as a circulation element road*
- Provide approved fire dept. turnarounds for all driveways greater than 150'.
- Grades of all access roads/driveways not to exceed 20%.

- Provide an irrevocable offer of dedication for reciprocal secondary ingress/egress in the vicinity of the northern project boundary on Pankey Rd.
- Gates, if installed across access roads, must conform to NCFPD standards for electric gates, to include opticom sensors, knox key switch, and exit loop detectors.
- Provide road signs in accordance with S.D. Co. DS #13.
- Provide access to Southern development through "Song Sparrow Road". Connect to street "D" of TM 5354.

Water Supply:

- Install sufficient residential and commercial type fire hydrants to maintain sufficient spacing, as per S.D. Co. Fire Code, based upon parcel size.

- The Fire Prevention Bureau is required to set a minimum fire flow for commercial land division per CFC Appendix III – A, Table A- III – A- 1. The applicant shall provide at time of plan review a copy of the original conditions of approval showing the originally required fire flow, and a current fire flow test meeting those standards. If the applicant is unable to provide the original conditions of approval this project will be required to provide for this project, a water system capable of delivering 4000 GPM at 20 psi. residual operating pressure with a 4 hour duration. The required fire flow may be adjusted during the approval process to reflect changes in design, construction type, or automatic fire protection measures as approved by the Fire Prevention Bureau.

Basic requirements for all structures in development:

- Fire hydrants shall be of a type that meets the approval of the North County Fire Protection District and should have one 4" outlet and one 2.5" inch outlet. Hydrants shall be located no more than 500 feet apart on roads throughout the development. Hydrants shall be located at all intersections, and in between where needed to provide the 500 feet spacing. Hydrants shall also be located at the entrance to all cul-de-sacs, but not in the bulb. Hydrants shall be located on the right (response) side of the street, based on the assumed fire engine driving route from the closest tract entrance.
- Final location of all hydrants is subject to approval of the Fire Marshal.

Multi- family occupancies:

- Any multi family residential buildings (5 or more units, 3 story buildings, or attached condominiums) shall be equipped with Fire Sprinkler systems, in order to minimize the fire problem and to confine a fire to the room of origin. Fire department pumper connection shall be at street in front of buildings (address side of buildings) and have a fire hydrant within 25 feet.
- Fire Hydrants shall be located at 300 foot intervals in front of lots, and on any on site roads when driving distance exceeds 150 feet form hydrant on a public road.

Commercial, office and industrial

- On site fire hydrants are required when distance exceeds 150 feet driving distance from an approved public hydrant on the street. Hydrants at industrial buildings to have two 4" outlets

and one 2.5" outlet. On site hydrants to be spaced at 300' intervals on the on site access road. Hydrants shall not be closer than 40 feet from the structure, or be protected by a 2 hour rated wall.

- Fire department pumper connections to be at street curb in front of address side of building at least 40 feet from the building. FDC to be within 25 feet of a public fire hydrant on the same side of the street.

Fire Protection:

- The existing Tax Rate Area for this subdivision is inadequate to support fire protection for this proposed development. *This will require negotiation of tax exchange rates for the entire project, inasmuch as the existing TRA is inadequate to support services to be provided.*
- Provide/upgrade fire suppression facilities/equipment for the North County Fire Protection District to address additional infrastructure/response demands placed upon District.
- All R-3 occupancies to be protected with automatic fire sprinkler systems in accordance with NFPA 13-D, and R-1 dwelling will require automatic fire sprinkler systems in accordance with NFPA 13-R.
- Fire protection installations for all other commercial or industrial occupancies as per fire protection plan reviewed and approved by this agency on 10-6-05.

Fire Protection Plan: The plans proposed now show some detail in terms of building locations and elevations. **Revise the Fire Protection Plan to address the following issues:**

- This agency will require one minor modification pertaining to vegetation clearance within "zone '3"". Specifically, where a 100' or greater fire buffer easement is required, the first 100' of clearing from structures includes complete clearing of native species, excluding isolated single specimens (as opposed to allowing 25% to remain, as noted in the plan on page 8).

- These comments remain valid only insofar as this plan is accepted by the County of San Diego as an element of the EIR. Should modifications to this plan be necessitated, any and/or all of these changes may be revoked at the discretion of the fire dept.
- Numerous commercial and residential buildings appear to be taller than what our agency can adequately ladder. This agency can only ladder buildings to 30 feet. The revised Fire Protection Plan needs to address the acceptable heights of the building.

Should you have any questions, please contact me at (760) 723-2015

Sincerely,

Sid Morel
Fire Marshal

CONTACT INFORMATION

CONTACT REPORT FORM

7578 El Cajon Boulevard, Suite 200, La Mesa, CA 91941
PHONE: (619) 462-1515 FAX: (619) 462-0552 EMAIL: DavidD@helixepi.com

Individual Contacted: Mr. Brian Lee
Title: District Engineer
Agency/Organization: Rainbow Municipal Water District
Date: 07/24/08
Phone: (760) 728-1178

Job Number: PAS-01
Contacted By: David Durham

Subject of Contact: Regarding RMWD usage of San Luis Rey WTP

Items Discussed:

Mr. Lee informed me that RMWD currently uses about 2/3, or about 1 mgd, of the 1.5 mgd capacity that they hold at the San Luis Rey WTP. Also, they do not have any plans to contract out the remaining portion of their capacity because they plan to utilize full capacity.

Melissa Whittemore

From: Melissa Whittemore
Sent: Thursday, June 19, 2008 10:22 AM
To: 'rproctor@fuesd.k12.ca.us'
Cc: 'David Davis'
Subject: Campus Park Development

Dear Mr. Proctor:

HELIX Environmental Planning, Inc. is currently preparing the 2nd Screencheck of the Draft Environmental Impact Report (EIR) for the proposed Campus Park project in the community of Fallbrook. In September 2005, you provided some very helpful information. Because three years have passed since we last contacted you, we would like to update responses.

The following provides a brief summary of the project. The Proposed Project is a mixed-use community, located just northeast of the intersection of I-15 and SR 76. The development would include a total of 533 single-family and 555 multi-family homes, as well as a public active sports park, two neighborhood parks, homeowner's association (HOA) recreational facilities, office professional use, Town Center, common area open space (fuel modification zones and manufactured slopes), and biological open space preserves.

It would be very helpful if you were to answer the following questions:

1. It is our understanding that the portion of the Project that lies within the Fallbrook Union Elementary School District would be served by Fallbrook Street School, Live Oak Elementary School and Potter Junior High School. What were the 2007/2008 student enrollments and what are the current capacities at each of these schools?

2. The student generation rate in 2005 was 0.425 student per single-family residence, and 0.394 student per multi-family residence when we last contacted you. Is this generation rate still correct?

3. Is the District in the process of or planning to build new school facilities or increase capacity at existing facilities?

A response by email, letter or phone (619-462-1515) within the next 10 days would be appreciated. Please let me know if you need additional information to assist in your responses. Thank you for your time and efforts.

Sincerely,

Melissa J. Whittemore
Project Manager

HELIX Environmental Planning, Inc.
7578 El Cajon Blvd., Suite 200
La Mesa, CA 91941
619.462.1515 (ph.), 619.462.0552 (fax)

CONTACT REPORT FORM

7578 El Cajon Boulevard, Suite 200, La Mesa, CA 91941
PHONE: (619) 462-1515 FAX: (619) 462-0552 EMAIL: *DavidD@helixepi.com*

Individual Contacted: Mr. Proctor
Title: Assistant Superintendent
Agency/Organization: Fallbrook Union Elementary School District
Date: 07/28/08
Phone: (760) 723-7025

Job Number: PAS-01
Contacted By: David Durham

Subject of Contact: Regarding the Campus Park Development

Items Discussed:

Mr. Proctor informed me that he does not have enrollment/capacity information broken down by school; all he has is the information provided in the developer fees report, provided by him. Also, he is not aware of any current plans to build new facilities or increase capacities of existing schools, but he did put in a request that a school be built in the Pardee project.

Melissa Whittemore

From: Chester Gannett [cgannett@fuhsd.net]
Sent: Thursday, June 26, 2008 2:49 PM
To: Melissa Whittemore
Subject: RE: Campus Park Development

Melissa In response to you email of June 19, please be advised that the 2007-08 enrollment at Fallbrook High was 2905, and the capacity at the school is approximately 3300. The most recent fee justification study calculated Grade 9-12 generation rates of 0.152 for single family units and 0.199 for multi-family units. And lastly, the district is no further along on the process of identifying a site for a new high school. I hope this helps. Chet Gannett

Chester E. Gannett
Assistant Superintendent/Business Services
Fallbrook Union High School District
760-723-6332 x6195

From: Melissa J. Whittemore [mailto:automailer@educationalnetworks.net]
Sent: Thursday, June 19, 2008 10:24 AM
To: Chester Gannett
Subject: Campus Park Development

This email is automatically sent from http://www.fuhsd.net/apps/staff/?rn=1589956 by IP address 66.120.125.2 (computer id: 0.557405142143367 7) on Thursday, June 19, 2008 at 10:24 AM US/Pacific timezone.

From: Melissa J. Whittemore <melissaw@helixepi.com>
Subject: Campus Park Development

Dear Mr. Gannett:

HELIX Environmental Planning, Inc. is currently preparing the 2nd Screencheck of the Draft Environmental Impact Report (EIR) for the proposed Campus Park project in the community of Fallbrook. In September 2005, you provided some very helpful information. Because three years have passed since we last contacted you, we would like to update responses.

The following provides a brief summary of the project. The Proposed Project is a mixed-use community, located just northeast of the intersection of I-15 and SR 76. The development would include a total of 533 single-family and 555 multi-family homes, as well as a public active sports park, two neighborhood parks, homeowner's association (HOA) recreational facilities, office professional use, Town Center, common area open space (fuel modification zones and manufactured slopes), and biological open space preserves.

It would be very helpful if you were to answer the following questions:

1. It is our understanding that the portion of the Project that lies within the Fallbrook Union High School District would be served by Fallbrook High School. What was the 2007/2008 student enrollment and what is the current capacity at this school?

2. The student generation rate in 2005 was 0.161 student per single-family residence and 0.109 student per multi-family residence. Is this generation rate still correct?

3. In 2005, the District was in the process of selecting a site for a new high school. What is the status of this new high school? Are there any plans to increase capacity at the existing high school?

A response by email, letter or phone (619-462-1515) within the next 10 days would be appreciated. Please let me know if you need additional information to assist in your responses. Thank you for your time and efforts.

Sincerely,

Melissa J. Whittemore
Project Manager

HELIX Environmental Planning, Inc.
7578 El Cajon Blvd., Suite 200
La Mesa, CA 91941
619.462.1515 (ph.), 619.462.0552 (fax)

Melissa Whittemore

From: Melissa Whittemore
Sent: Thursday, June 19, 2008 10:18 AM
To: 'wjones@sdcoe.net'
Cc: 'David Davis'
Subject: Campus Park Development

Dear Mr. Jones:

HELIX Environmental Planning, Inc. is currently preparing the 2nd Screencheck of the Draft Environmental Impact Report (EIR) for the proposed Campus Park project in the community of Fallbrook. In September 2005, you provided some very helpful information. Because three years have passed since we last contacted you, we would like to update responses.

The following provides a brief summary of the project. The Proposed Project is a mixed-use community, located just northeast of the intersection of I-15 and SR 76. The development would include a total of 533 single-family and 555 multi-family homes, as well as a public active sports park, two neighborhood parks, homeowner's association (HOA) recreational facilities, office professional use, Town Center, common area open space (fuel modification zones and manufactured slopes), and biological open space preserves.

It would be very helpful if you were to answer the following questions:

1. It is our understanding that the portion of the Project that lies within the Bonsall Union School District would be served by Bonsall Elementary School and Norman Sullivan Middle School. What were the 2007/2008 student enrollments and what are the current capacities at each of these schools?

2. The student generation rate in 2005 was 0.4 student per dwelling unit (both single and multi-family homes) when we last contacted you. Is this generation rate still correct?

3. In 2005, the District was seeking to pass a bond initiative to rebuild or replace existing aging schools. Was it passed and if so, is the money being used to update grade either school that would serve the Project?

4. Is the District in the process of or planning to build new school facilities or increase capacity at existing facilities?

A response by email, letter or phone (619-462-1515) within the next 10 days would be appreciated. Please let me know if you need additional information to assist in your responses. Thank you for your time and efforts.

Sincerely,

Melissa J. Whittemore
Project Manager

HELIX Environmental Planning, Inc.
7578 El Cajon Blvd., Suite 200
La Mesa, CA 91941
619.462.1515 (ph.), 619.462.0552 (fax)

CONTACT REPORT FORM

7578 El Cajon Boulevard, Suite 200, La Mesa, CA 91941
PHONE: (619) 462-1515 FAX: (619) 462-0552 EMAIL: DavidD@helixepi.com

Individual Contacted:	Mr. Wayne Jones	**Job Number:**	PAS-01
Title:	Assistant Superintendent	**Contacted By:**	David Durham
Agency/Organization:	Bonsall Union School District		
Date:	07/21/08		
Phone:	(760) 631-5200 x 105		

Subject of Contact: Regarding the Campus Park Development

Items Discussed:

No updated information is available, including enrollment and capacity figures. However, he did say that the 2005 bond initiative to rebuild/replace existing schools was passed and the funds are being used to rebuild Bonsall Elementary School.

Melissa Whittemore

From: Melissa Whittemore
Sent: Thursday, June 19, 2008 10:20 AM
To: 'dgoldberg@ncfire.org'
Cc: 'David Davis'
Subject: Campus Park Development

Dear Chief Goldberg:

HELIX Environmental Planning, Inc. is currently preparing the 2nd Screencheck of the Draft Environmental Impact Report (EIR) for the proposed Campus Park project in the community of Fallbrook. In September 2005, you provided some very helpful information. Because three years have passed since we last contacted you, we would like to update responses.

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It would be very helpful if you were to answer the following questions:

1. Your website states that Station No. 4 is staffed by one captain, one engineer, two firefighters/paramedics and one reserved firefighter, and includes one medic engine, one brush engine and one medic ambulance. Is this currently accurate?

2. How many calls were received by the District and how many calls did Station No. 4 respond to during the last fiscal year?

3. In 2005, we were informed that Station No. 4 mostly responds to traffic accidents on I-15. Is this still accurate?

A response by email, letter or phone (619-462-1515) within the next 10 days would be appreciated. Please let me know if you need additional information to assist in your responses. Thank you for your time and efforts.

Sincerely,

Melissa J. Whittemore
Project Manager

HELIX Environmental Planning, Inc.
7578 El Cajon Blvd., Suite 200
La Mesa, CA 91941
619.462.1515 (ph.), 619.462.0552 (fax)

Melissa Whittemore

From: Morel, Sidney [SMorel@ncfire.org]
Sent: Monday, July 14, 2008 8:57 AM
To: Melissa Whittemore
Subject: RE: Campus Park Development
Attachments: TM 5338 RPL 4 8-07.doc

Melissa, you are correct about the staffing at station 4. Station 4 responds mostly to medical aids. I will need some time to pull the stats regarding station 4 and there is no way to determine how many more calls they can respond to a day. As you know emergency incidents are very dynamic. Without specific details about your project our comments are general in nature. I have included a copy of our last response regarding the project and I look forward to reviewing the EIR.

Sid Morel
Division Chief/Fire Marshal
North County Fire Protection District
315 E. Ivy Street
Fallbrook, CA 92028
Phone: (760) 723-2015
Fax: (760) 723-2045
Email: smorel@ncfire.org

From: Goldberg, Daniel
Sent: Wednesday, July 09, 2008 3:56 PM
To: Melissa Whittemore
Cc: Morel, Sidney
Subject: RE: Campus Park Development

Melissa,

This correspondence should be directed to our Fire Marshall, Division Chief Sid Morel. I have asked that Mr. Morel contact you directly to ensure the information you requested concerning the Campus Park Development is provided.

Fire Marshall Sid Morel
(760) 644-1103 - Cell
(760) 723-2010 - Office

Daniel A. Goldberg
Division Chief, Operations
North County Fire Protection District
315 East Ivy Street
Fallbrook, California 92028
Office: 760-723-2031
Cell: 760-644-1103
E-Mail dgoldberg@ncfire.org

From: Melissa Whittemore [mailto:MelissaW@helixepi.com]

Sent: Wednesday, July 09, 2008 11:52 AM
To: Goldberg, Daniel
Subject: RE: Campus Park Development

Hi Chief Goldberg -

I am just checking in to see if you have gotten the opportunity to obtain the information requested below. Please let me know if additional information from me is required. Thank you for your help.

Sincerely,
Melissa J. Whittemore

From: Melissa Whittemore
Sent: Thursday, June 19, 2008 10:20 AM
To: 'dgoldberg@ncfire.org'
Cc: 'David Davis'
Subject: Campus Park Development

Dear Chief Goldberg:

HELIX Environmental Planning, Inc. is currently preparing the 2nd Screencheck of the Draft Environmental Impact Report (EIR) for the proposed Campus Park project in the community of Fallbrook. In September 2005, you provided some very helpful information. Because three years have passed since we last contacted you, we would like to update responses.

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It would be very helpful if you were to answer the following questions:

1. Your website states that Station No. 4 is staffed by one captain, one engineer, two firefighters/paramedics and one reserved firefighter, and includes one medic engine, one brush engine and one medic ambulance. Is this currently accurate?

2. How many calls were received by the District and how many calls did Station No. 4 respond to during the last fiscal year? How many more calls per day do you think the station could handle?

3. In 2005, we were informed that Station No. 4 mostly responds to traffic accidents on I-15. Is this still accurate?

A response by email, letter or phone (619-462-1515) within the next 10 days would be appreciated. Please let me know if you need additional information to assist in your responses. Thank you for your time and efforts.

Sincerely,

Melissa J. Whittemore
Project Manager

HELIX Environmental Planning, Inc.
7578 El Cajon Blvd., Suite 200
La Mesa, CA 91941
619.462.1515 (ph.), 619.462.0552 (fax)

NORTH COUNTY FIRE PROTECTION DISTRICT

315 East Ivy Street · Fallbrook, California 92028-2138 · (760) 723-2005 · Fax (760) 723-2004 · www.ncfire.org

June 6, 2008

County of San Diego
Dept. of Planning & Land Use
5201 Ruffin Rd. Ste. B
San Diego, CA 92123-1666

RE: TM 5338 RPL 4 Campus Park (formerly Passerelle Project)

Please review the following comments pertaining to fire protection for this proposed development:

Access: Interior access roads to conform to S.D. Co. Standards for Private/Public Roads, to include on-street parking when so indicated by parcel sizing & use. Based upon density provided, on-street parking on both sides of streets is indicated, thereby requiring 36' AC surface roads.
In multi-family areas, "private driveways" are proposed for garage access. These are required to be designated "fire lanes" or fire access roadways. Our concern is that parking proposed is distant from the majority of the residences, and does not appear to be adequate in count. Guest parking and disabled parking is not clearly defined. Driveways directly in front of garages typically would not accommodate even a compact car. Similar existing projects have demonstrated that people will violate posted "fire lane" signs if reasonable parking accommodation is not provided. Obstructed fire lanes result in delayed emergency responses, and can create life-threatening situations. Increased enforcement is not feasible and not a substitute for adequate design.

The following roads must be constructed prior to phases:

- Pala Mesa Drive west of I-15 prior to any construction north of the intersection of Pala Mesa Drive and Horse Ranch Creek Road.
- Horse Ranch Creek Road: Hwy 76 to Stewart Canyon road prior to any construction north of Harvest Glen Lane.
- Baltimore Oriole Road: (appears to be the same as Pala Mesa Heights Road) connected to Pala Mesa Heights Road to Meadowood project "Street D" prior to construction in the vicinity of Song Sparrow Drive.
- Pankey Road connected to Horse Ranch Creek Rad prior to construction east of Horse Ranch Creek Road.
- Provide 42' AC radius cul-de-sacs all access roads greater than 150'.
- Improvement of Pala Mesa Dr., from Hwy 395 to Pankey Rd., will ensure fire apparatus response time within 5 minutes to all portions of this development. *Therefore, it is necessary to improve Pala Mesa Dr. from the existing Fire Station #4 to the project as a circulation element road*

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- Provide approved fire dept. turnarounds for all driveways greater than 150'.
- Grades of all access roads/driveways not to exceed 20%.
- Provide an irrevocable offer of dedication for reciprocal secondary ingress/egress in the vicinity of the northern project boundary on Pankey Rd.
- Gates, if installed across access roads, must conform to NCFPD standards for electric gates, to include opticom sensors, knox key switch, and exit loop detectors.
- Provide road signs in accordance with S.D. Co. DS #13.
- Provide access to Southern development through "Song Sparrow Road". Connect to street "D" of TM 5354.

Water Supply:

- Install sufficient residential and commercial type fire hydrants to maintain sufficient spacing, as per S.D. Co. Fire Code, based upon parcel size.

- The Fire Prevention Bureau is required to set a minimum fire flow for commercial land division per CFC Appendix III – A, Table A- III – A- 1. The applicant shall provide at time of plan review a copy of the original conditions of approval showing the originally required fire flow, and a current fire flow test meeting those standards. If the applicant is unable to provide the original conditions of approval this project will be required to provide for this project, a water system capable of delivering 4000 GPM at 20 psi. residual operating pressure with a 4 hour duration. The required fire flow may be adjusted during the approval process to reflect changes in design, construction type, or automatic fire protection measures as approved by the Fire Prevention Bureau.

Basic requirements for all structures in development:

- Fire hydrants shall be of a type that meets the approval of the North County Fire Protection District and should have one 4" outlet and one 2.5" inch outlet. Hydrants shall be located no more than 500 feet apart on roads throughout the development. Hydrants shall be located at all intersections, and in between where needed to provide the 500 feet spacing. Hydrants shall also be located at the entrance to all cul-de-sacs, but not in the bulb. Hydrants shall be located on the right (response) side of the street, based on the assumed fire engine driving route from the closest tract entrance.
- Final location of all hydrants is subject to approval of the Fire Marshal.

Multi- family occupancies:

- Any multi family residential buildings (5 or more units, 3 story buildings, or attached condominiums) shall be equipped with Fire Sprinkler systems, in order to

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minimize the fire problem and to confine a fire to the room of origin. Fire department pumper connection shall be at street in front of buildings (address side of buildings) and have a fire hydrant within 25 feet.

- Fire Hydrants shall be located at 300 foot intervals in front of lots, and on any on site roads when driving distance exceeds 150 feet form hydrant on a public road.

Commercial, office and industrial

- On site fire hydrants are required when distance exceeds 150 feet driving distance from an approved public hydrant on the street. Hydrants at industrial buildings to have two 4" outlets and one 2.5" outlet. On site hydrants to be spaced at 300' intervals on the on site access road. Hydrants shall not be closer than 40 feet from the structure, or be protected by a 2 hour rated wall.
- Fire department pumper connections to be at street curb in front of address side of building at least 40 feet from the building. FDC to be within 25 feet of a public fire hydrant on the same side of the street.

Fire Protection:

- The existing Tax Rate Area for this subdivision is inadequate to support fire protection for this proposed development. *This will require negotiation of tax exchange rates for the entire project, inasmuch as the existing TRA is inadequate to support services to be provided.*
- Provide/upgrade fire suppression facilities/equipment for the North County Fire Protection District to address additional infrastructure/response demands placed upon District.
- All R-3 occupancies to be protected with automatic fire sprinkler systems in accordance with NFPA 13-D, and R-1 dwelling will require automatic fire sprinkler systems in accordance with NFPA 13-R.
- Fire protection installations for all other commercial or industrial occupancies as per fire protection plan reviewed and approved by this agency on 10-6-05.

Fire Protection Plan: The plans proposed now show some detail in terms of building locations and elevations. **Revise the Fire Protection Plan to address the following issues:**

- This agency will require one minor modification pertaining to vegetation clearance within "zone '3'". Specifically, where a 100' or greater fire buffer easement is required, the first 100' of clearing from structures includes complete clearing of native species, excluding isolated single specimens (as opposed to allowing 25% to remain, as noted in the plan on page 8).

NORTH COUNTY FIRE PROTECTION DISTRICT

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- These comments remain valid only insofar as this plan is accepted by the County of San Diego as an element of the EIR. Should modifications to this plan be necessitated, any and/or all of these changes may be revoked at the discretion of the fire dept.
- Numerous commercial and residential buildings appear to be taller than what our agency can adequately ladder. This agency can only ladder buildings to 30 feet. The revised Fire Protection Plan needs to address the acceptable heights of the building.

Should you have any questions, please contact me at (760) 723-2015

Sincerely,

Sid Morel
Fire Marshal

Melissa Whittemore

From: Kettner, Susan [SKettner@ncfire.org]
Sent: Monday, July 14, 2008 11:00 AM
To: Melissa Whittemore
Cc: Morel, Sidney
Subject: Campus Park Development

Hi Melissa,

I am responding to an email from you and forwarded to Chief Morel.

Question 2 asked:

How many calls were received by the District in FY 07/08? 4309

How many calls did Station No. 4 respond to during the last fiscal year? 1263

Susan

Susan Kettner
Administrative Specialist
North County Fire Protection District
(760) 723-2010 Direct Line
(760) 723-2045 Fax
skettner@ncfire.org

HELIX environmental planning, inc.

7578 El Cajon Boulevard, Suite 200
La Mesa, CA 91941
fax (619) 462-0552
phone (619) 462-1515

Inland Empire Office
phone (951) 328-1700

June 19, 2008 PAS-01

Lieutenant Alex Dominguez
San Diego County Sheriff's Department
Fallbrook Substation
388 East Alvarado St
Fallbrook, CA 92028

Subject: Campus Park Development

Dear Lieutenant Dominguez:

HELIX Environmental Planning, Inc. (HELIX) is currently preparing the 2nd Screencheck of the Draft Environmental Impact Report (EIR) for the proposed Campus Park project in the community of Fallbrook. In September 2005, you provided some very helpful information. Because three years have passed since we last contacted you, we would like to update responses.

The following provides a brief summary of the project. The Proposed Project is a mixed-use community, located just northeast of the intersection of I-15 and SR 76. The development would include a total of 533 single-family and 555 multi-family homes, as well as a public active sports park, two neighborhood parks, homeowner's association (HOA) recreational facilities, office professional use, Town Center, common area open space (fuel modification zones and manufactured slopes), and biological open space preserves.

It would be very helpful if you were to answer the following questions:

1. What are the current average response times for the entire Fallbrook command?

2. What are the current average response times for Beat 388, which includes the Project site?

3. Are there any current plans to build new sheriff facilities or increase the capacity of existing facilities?

A response by email (melissaw@helixepi.com), letter or phone (619-462-1515) within the next 10 days would be appreciated. Please let me know if you need additional information to assist in your responses. Thank you for your time and efforts.

Sincerely,

Melissa J. Whittemore

Melissa Whittemore

From: Melissa Whittemore
Sent: Thursday, June 19, 2008 10:26 AM
To: 'brian.sampson@sdsheriff.org'
Cc: 'David Davis'
Subject: Campus Park Development

Dear Mr. Sampson:

HELIX Environmental Planning, Inc. is currently preparing the 2nd Screencheck of the Draft Environmental Impact Report (EIR) for the proposed Campus Park project in the community of Fallbrook. In September 2005, you provided some very helpful information. Because three years have passed since we last contacted you, we would like to update responses.

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In 2005, our understanding was that a Law Enforcement Master Plan was being prepared that would identify the Project area as a future expansion area that would not be easily served from current facilities. Is this statement still accurate, and has the Master Plan been completed—if so, can you please direct me to where I can view the plan?

A response by email, letter or phone (619-462-1515) within the next 10 days would be appreciated. Please let me know if you need additional information to assist in your responses. Thank you for your time and efforts.

Sincerely,

Melissa J. Whittemore
Project Manager

HELIX Environmental Planning, Inc.
7578 El Cajon Blvd., Suite 200
La Mesa, CA 91941
619.462.1515 (ph.), 619.462.0552 (fax)

Melissa Whittemore

From: Mays, Jody [Jody.Mays@sdsheriff.org]
Sent: Monday, June 30, 2008 7:01 AM
To: Melissa Whittemore
Subject: FW: Campus Park Development

From: Mays, Jody
Sent: Thursday, June 26, 2008 3:47 PM
To: melissaW@helixpi.com
Cc: Sampson, Brian
Subject: RE: Campus Park Development

Ms. Whittemore:
Mr. Sampson forwarded your email to me for a response. The Department's Law Enforcement Facilities Master Plan was completed in late 2005. It is really an internal document and is unfortunately not published online anywhere that you might be able to access it. Mr. Sampson's assessment of the law enforcement services situation in that part of the County is still accurate. A new facility was identified in the MP to serve this region and we are presently in the process of confirming the need, size and preferred location for that Station/Substation. We have some data gathering and analysis to do and we are cooperating with our partner agencies to be sure we are providing a reasonable response to applicants and DPLU.

Thanks,

Jody Mays

Jody L. Mays
Project Manager - Facilities & Special Projects
San Diego Sheriff's Department - Mgmt. Services Bureau
(858) 974-2237
jody.mays@sdsheriff.org
MISSION STATEMENT
"The Management Services Bureau provides quality business related support and expertise to our customers: law enforcement and the public."

From: Melissa Whittemore [mailto:MelissaW@helixepi.com]
Sent: Thursday, June 19, 2008 10:26 AM
To: Sampson, Brian
Cc: David Davis
Subject: Campus Park Development

Dear Mr. Sampson:

HELIX Environmental Planning, Inc. is currently preparing the 2nd Screencheck of the Draft Environmental

Impact Report (EIR) for the proposed Campus Park project in the community of Fallbrook. In September 2005, you provided some very helpful information. Because three years have passed since we last contacted you, we would like to update responses.

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In 2005, our understanding was that a Law Enforcement Master Plan was being prepared that would identify the Project area as a future expansion area that would not be easily served from current facilities. Is this statement still accurate, and has the Master Plan been completed—if so, can you please direct me to where I can view the plan?

A response by email, letter or phone (619-462-1515) within the next 10 days would be appreciated. Please let me know if you need additional information to assist in your responses. Thank you for your time and efforts.

Sincerely,

Melissa J. Whittemore
Project Manager

HELIX Environmental Planning, Inc.
7578 El Cajon Blvd., Suite 200
La Mesa, CA 91941
619.462.1515 (ph.), 619.462.0552 (fax)

Melissa Whittemore

Subject: RE: Campus Park from HELIX

-----Original Message-----
From: David Durham
Sent: Tuesday, August 19, 2008 1:49 PM
To: Melissa Whittemore
Subject: FW: Campus Park from HELIX

Melissa,

Attached is the response times run that Darcie Brown performed. As you can see, the dates for the calls are the first 6 months of this year. Darcie informed me that the order of priority is 1 (highest) to 4 (lowest). My understanding is that priorities 3 and 4 are our version of non-priority calls and priorities 1 and 2 are our version of priority calls. However, Darcie is looking to see if there is an updated explanation/legend of this scale. I will forward it to you when she sends it to me.

David

-----Original Message-----
From: Brown, Darcie [mailto:Darcie.Brown@sdsheriff.org]
Sent: Tuesday, August 19, 2008 1:33 PM
To: David Durham
Subject: RE: Campus Park from HELIX

I actually had not sent it yet. I was double checking with our communications center to see if they had a more up to date explanation of the priorities of calls. My version is a bit older and I wanted to make sure it hadn't been updated. I will send you the data right now, and when I hear back about the explanation, I will send that then. I hope that works.

Darcie Brown
Crime Analyst
760-940-4925

Melissa Whittemore

Subject: RE: explanation

-----Original Message-----
From: Brown, Darcie [mailto:Darcie.Brown@sdsheriff.org]
Sent: Wednesday, August 20, 2008 10:38 AM
To: David Durham
Subject: explanation

David-

This is about as close as I can get in sending you a document that represents an explanation of the breakdown of priorities. This list will not include EVERY single call type, but will give you a pretty good picture overall. Basically, I am sending you a list of call types that are broken down 1-7, 1 being the highest priority. How this translates to the report I provided yesterday is as follows:

Priority 1 (on the report) is a priority call and from the list I am giving you now represents priority 0 & 1.
Priority 2 (on the report) is also a priority call and from the list I am giving you now represents priority 2 & 3.
Priority 3 (on the report) is not a "priority" call and from the list represents priority 4 & 5.
Priority 4 (on the report) is also not a "priority" call and from the list represents 6 & 7.

Although this attachment does not list the "0's", I will give you a few examples of what call types those are: Foot Pursuit, Officer needs assistance, traffic pursuit, Unit emergency.

I hope this all makes sense. Let me know.

Darcie Brown
Crime Analyst
Vista & Fallbrook Sheriff's Stations
760-940-4925

CAD MIS BEAT REPORT

1/1/2008 - 6/30/2008 Command: Fallbrook

			Average Times						
Beat	Pri	Total	Response Time	Enroute-Cleared	Received-Dispatch	Dispatch - Enroute	Enroute-Arrive	Dispatch-Arrive	Arrive-Cleared
381	1	0							
	2	181	11.7	85.3	3.8	2.1	6.6	8.6	78.4
	1+2	181							
	3	354	15.9	68.5	5.3	2.9	7.1	10.9	61.4
	4	282	39.4	51.2	16.2	17.9	10.3	23.3	37.2
	3+4	636	25.7	62.6	10.2	8.0	8.2	16.1	51.3
Beat Total		817							
382	1	0							
	2	147	10.5	53.7	2.2	1.5	6.9	8.3	47.7
	1+2	147							
	3	422	14.1	42.1	4.9	3.0	6.5	9.7	36.2
	4	213	33.0	42.5	12.6	15.8	4.6	21.7	73.7
	3+4	635	20.0	42.2	7.5	5.9	6.1	13.4	47.8
Beat Total		782							
383	1	0							
	2	36	10.2	35.1	0.7	1.8	7.6	9.4	27.5
	1+2	36							
	3	82	17.1	35.5	4.1	2.8	10.4	12.6	25.7
	4	54	47.6	74.7	20.4	14.0	15.3	25.5	47.9
	3+4	136	28.5	46.1	10.5	5.8	11.8	17.4	34.0
Beat Total		172							
384	1	0							
	2	118	10.4	67.6	2.4	1.8	5.1	7.9	59.8
	1+2	118							
	3	341	15.2	35.3	5.5	3.1	6.7	9.8	30.5
	4	647	35.6	105.6	18.5	14.4	5.9	19.2	71.7
	3+4	988	26.8	66.7	13.9	8.1	6.4	15.2	54.0
Beat Total		1,106							
385	1	0							
	2	115	7.7	69.6	1.7	1.3	5.0	6.1	63.3
	1+2	115							
	3	331	14.1	41.9	5.0	3.7	4.8	9.1	36.9
	4	245	38.0	51.9	16.7	16.9	5.6	22.4	51.2
	3+4	576	23.3	44.8	9.9	7.6	5.0	14.2	42.4
Beat Total		691							

Average Times

Beat	Pri	Total	Response Time	Enroute-Cleared	Received-Dispatch	Dispatch - Enroute	Enroute-Arrive	Dispatch-Arrive	Arrive-Cleared
386	1	1	1.1	222.2	0.9	0.1	0.2	0.2	222.0
	2	20	10.0	45.8	0.9	0.8	8.2	9.0	41.2
	1+2	21	9.2	60.5	0.9	0.7	7.5	8.2	57.7
	3	90	17.4	41.3	4.9	6.3	7.3	12.9	34.7
	4	64	39.3	41.3	13.8	14.5	8.9	21.9	38.2
	3+4	154	24.5	41.3	8.6	8.2	7.6	15.8	35.8
Beat Total		175							
387	1	0							
	2	29	15.5	79.7	1.4	0.8	14.6	14.0	66.3
	1+2	29							
	3	74	20.6	46.1	5.5	2.2	13.2	14.9	32.1
	4	64	40.0	48.0	18.2	16.6	12.3	28.0	34.2
	3+4	138	29.2	46.8	11.3	7.4	12.9	20.7	33.0
Beat Total		167							
388	1	0							
	2	63	29.2	85.7	4.8	4.7	19.0	24.2	68.0
	1+2	63							
	3	197	29.2	54.2	7.3	4.0	18.2	22.7	42.4
	4	149	45.1	60.0	14.6	16.2	18.6	32.5	38.8
	3+4	346	35.8	56.1	10.4	8.1	18.3	26.8	40.9
Beat Total		409							
389	1	1	4.8	481.4	0.4	0.5	3.9	4.4	477.5
	2	66	26.8	82.7	4.0	3.1	19.3	22.7	62.6
	1+2	67	26.4	90.7	4.0	3.0	19.0	22.4	70.6
	3	141	25.2	69.0	5.1	3.3	16.5	19.8	56.9
	4	113	40.0	143.7	12.0	19.6	9.3	29.2	109.8
	3+4	254	31.5	94.0	8.2	8.7	14.0	23.8	79.6
Beat Total		321							
390	1	0							
	2	39	15.0	61.6	2.3	2.4	10.1	12.6	53.8
	1+2	39							
	3	111	22.8	45.7	6.4	2.6	13.5	16.9	34.2
	4	74	40.0	51.2	14.4	13.9	15.2	27.0	35.3
	3+4	185	28.9	47.3	9.6	5.8	14.0	20.5	34.6
Beat Total		224							

Average Times

Beat	Pri	Total	Response Time	Enroute-Cleared	Received-Dispatch	Dispatch - Enroute	Enroute-Arrive	Dispatch-Arrive	Arrive-Cleared
391	*1*	0							
	2	33	12.3	91.1	1.7	1.2	10.1	10.7	74.9
	1+2	*33*							
	3	130	20.8	51.3	5.9	5.5	9.2	15.2	42.1
	4	107	42.5	59.2	21.5	11.6	9.9	22.5	42.5
	3+4	*237*	*29.4*	*53.8*	*12.9*	*7.4*	*9.4*	*18.1*	*42.3*
Beat Total		270							
392	*1*	0							
	2	49	14.0	57.0	1.0	0.7	12.6	13.0	45.6
	1+2	*49*							
	3	217	20.6	33.2	3.9	2.7	12.8	16.1	24.8
	4	122	47.0	50.9	17.4	24.1	5.5	30.1	48.0
	3+4	*339*	*29.3*	*37.7*	*8.8*	*8.2*	*10.9*	*20.7*	*32.5*
Beat Total		388							
393	*1*	0							
	2	35	21.8	80.2	3.2	3.3	14.7	18.3	66.2
	1+2	*35*							
	3	119	22.7	41.3	3.6	3.1	15.9	19.0	30.2
	4	99	45.4	93.0	19.0	24.7	3.1	29.1	76.5
	3+4	*218*	*33.2*	*58.8*	*10.6*	*10.4*	*10.9*	*23.7*	*51.7*
Beat Total		253							
394	*1*	0							
	2	3	11.1	40.9	0.8	1.3	9.1	10.4	31.8
	1+2	*3*							
	3	32	21.1	57.2	4.1	0.8	15.9	16.7	40.7
	4	13	39.6	66.5	12.7	28.1	-2.4	25.8	62.2
	3+4	*45*	*26.7*	*59.0*	*6.6*	*6.1*	*12.0*	*19.5*	*47.2*
Beat Total		48							
395	*1*	0							
	2	1							
	1+2	*1*							
	3	8	16.0	100.1	1.8	0.8	18.7	13.9	68.0
	4	8	93.2	37.0	46.1	28.0	-3.2	50.6	42.8
	3+4	*16*	*48.2*	*68.5*	*24.0*	*14.4*	*10.5*	*29.2*	*57.5*
Beat Total		17							

Average Times

Beat	Pri	Total	Response Time	Enroute-Cleared	Received-Dispatch	Dispatch - Enroute	Enroute-Arrive	Dispatch-Arrive	Arrive-Cleared
396	*1*	0							
	2	81	22.2	105.7	2.9	1.4	17.4	19.1	89.4
	1+2	*81*							
	3	195	25.1	45.5	4.8	2.2	17.3	20.5	35.5
	4	174	54.9	73.6	21.1	16.5	18.2	33.0	63.5
	3+4	*369*	*38.6*	*56.1*	*12.5*	*7.6*	*17.6*	*26.1*	*48.1*
Beat Total		450							
397	*1*	0							
	2	4	17.5	144.2	2.0	0.5	17.0	15.5	93.4
	1+2	*4*							
	3	19	22.3	56.2	3.2	2.2	16.2	18.6	45.8
	4	12	87.7	49.9	32.6	34.6	20.7	51.0	46.3
	3+4	*31*	*42.2*	*54.5*	*14.5*	*11.3*	*17.3*	*28.5*	*45.9*
Beat Total		35							
Grand totals		**6,325**	**25.8**	**58.2**	**9.6**	**6.7**	**9.9**	**17.3**	**49.8**

**** Response Time is the time from when the dispatcher receives a call until a Deputy arrives onscene.***
Blank values in the average time columns indicate appropriate times were not available for computation.